APPENDIX 1

Administration of a Potential Senior 4 Mathematics/Mathématiques Storm Date Examination

Conditions Required for Administration of a Storm Date Examination

The Senior 4 Mathematics/Mathématiques 40S and 40G Provincial Examinations are covered under the storm date policy (*Policies and Procedures for Provincial Examinations and Standards Tests*, p. 8). A storm date examination will be administered if the number of students unable to write the scheduled examination **due to inclement weather** reaches or exceeds 15 per cent of the total number of students in the province registered to write in January.

The decision to proceed or not proceed with a storm date examination will be made by the Department based on information received from schools with students registered to write the January Senior 4 Mathematics/Mathématiques 40S and 40G Provincial Examinations. It is important that the names of students unable to complete the January examination due to inclement weather be received by the Assessment and Evaluation Branch by 12 noon on Wednesday, January 19, 2000.

If the Department decides to proceed with a Mathematics/Mathématiques Storm Date Examination, it will be administered on Thursday, February 3, 2000.

These time frames are required so that Departmental staff can complete processing and marking activities for the storm date examination with the same level of precision established at the January examination marking session.

Registration Procedure

- Identify students who were unable to write the Senior 4 Mathematics/Mathématiques 40S and 40G examinations due to inclement weather on the original January 18, 2000.
- Complete and fax the *Provincial Storm Date Examination Student Registration Form* to the Assessment and Evaluation Branch at 204-948-3353 by 12 noon on Wednesday, January 19, 2000.
- Schools that are **not** affected by inclement weather are requested to write "Nil Report" on the *Provincial Storm Date Examination Student Registration Form* and fax the form as noted above.
- Official notification of the decision to proceed or not proceed will be faxed to schools on or before Friday, January 21, 2000.

Adaptations

The adaptations granted by the Department for the Senior 4 Mathematics/Mathématiques 40S and 40G Provincial Examinations—January 2000 will apply to the storm date examination. A new request would need to be made only if a student's situation has changed since the original request was submitted. In this case, submit a new *Request for Adaptations Form* to the Assessment and Evaluation Branch at the time of registering students for a potential storm date examination. (See *Policies and Procedures for Provincial Examinations and Standards Tests,* pp. 4–5.)

Marking

If the Department decides to proceed with the storm date examination(s), teachers who are already familiar with the marking of the January 2000 examinations will be recruited to mark the storm date examination. Marking sessions will take place after school hours and during weekends in an effort to minimize disruption of regular classroom activities.

Mark Release Date

The mark release date for the Senior 4 Mathematics/Mathématiques 40S and 40G storm date examinations will be Friday, March 10, 2000.

Re-read Deadline Date

The deadline date for re-read applications for the Senior 4 Mathematics/Mathématiques 40S and 40G storm date examinations will be Monday, March 23, 2000.

APPENDIX 2

School Code:_____ Page _____ of _____
School Name:_____

PROVINCIAL STORM DATE EXAMINATION STUDENT REGISTRATION FORM

Mathematics 40S Provincial Examination

If the provincial storm date examination is offered, the following students would be eligible to write the storm date examination for Mathematics 40S.

Names of Students Registered to Write Examination Complete this form by printing names in alphabetical order or attach an alphabetical class list to this form.		
M.E.T. #	**Last Name**	**First Name**

The total number of students registered to write the storm date examination at your school: ____

Please keep the original of this list for your records and fax a copy of the list to the Assessment and Evaluation Branch at (204) 948-3353 by noon on January 19, 2000. If faxing a copy of the list is not possible, principals are asked to telephone the Assessment and Evaluation Branch by this due date at (204)945-6156 or 1-800-282-8069 (ext. 6156).

If additional forms are required, please copy as necessary.

PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S

JANUARY 18, 2000

Manitoba
Education
and Training

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

PERFORMANCE BY UNIT, COGNITIVE LEVEL, AND ITEM TYPE

Number of students used to calculate means = 865

	Exam Items	Total Marks	Mean Raw Score	Mean Percent	Standard Deviation Raw Score
UNIT					
1. Polynomial and Rational Functions	a	25.0	15.71	62.84	4.97
2. Circular Functions and Trigonometry	b	38.0	24.41	64.23	7.66
3. Analytic Geometry	c	12.0	5.88	49.01	2.91
4. Exponents and Logarithms	d	13.0	7.23	55.62	3.68
5. Sequences and Series	e	12.0	6.98	58.19	2.81
Total:		100.0	60.21	60.21	19.02

a. Part A 1-10, Part B 1-5
b. Part A 11-25, Part B 6-12
c. Part A 26-30, Part B 13-14
d. Part A 31-35, Part B 15-16
e. Part A 36-40, Part B 17-19

COGNITIVE LEVEL					
1. Knowledge/Recognition	f	5.0	3.49	69.80	1.20
2. Comprehension/Application	g	64.0	40.98	64.03	12.78
3. Analysis/Synthesis/Evaluation	h	31.0	15.74	50.79	6.27
Total:		100.0	60.21	60.21	19.02

f. Part A 1, 25, 31, 34, 38
g. Part A 2-7, 9-10, 12-20, 26-30, 32-33, 35-37, 39
Part B 1, 2, 4, 6-7, 9-10, 12, 14, 16-18
h. Part A 8, 11, 21-24, 40, Part B 3a-3b, 5, 8, 11, 13, 15, 19

ITEM TYPE					
1. Multiple Choice	i	40.0	28.29	70.71	6.58
2. Long Answer	j	60.0	31.93	53.21	13.34
Total:		100.0	60.21	60.21	19.02

i. Part A 1-40
j. Part B 1-19

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

PERCENTAGE OF STUDENTS CHOOSING EACH OPTION

PART A - MULTIPLE-CHOICE
(* = correct answer)
(NR = no response)
(MR = multiple response)

N = 865 Question	A	B	C	D	NR	MR
1	49.5*	16.2	6.5	27.7	0.1	0.0
2	87.9*	3.8	6.8	1.5	0.0	0.0
3	5.7	7.2	4.3	82.8*	0.1	0.0
4	57.3*	19.4	13.6	9.1	0.5	0.0
5	8.1	68.6*	4.5	18.8	0.0	0.0
6	2.1	8.6	80.5*	8.8	0.1	0.0
7	66.0*	3.0	15.6	15.4	0.0	0.0
8	6.8	5.9	86.7*	0.6	0.0	0.0
9	11.3	6.6	74.0*	7.9	0.2	0.0
10	1.8	79.8*	0.7	17.7	0.0	0.0
11	6.4	74.1*	4.7	14.8	0.0	0.0
12	65.5*	12.1	9.4	12.3	0.7	0.0
13	9.0	4.9	11.9	74.0*	0.2	0.0
14	10.6	69.7*	9.0	10.1	0.6	0.0
15	11.6	5.1	16.3	66.8*	0.2	0.0
16	8.0	69.4*	8.3	13.8	0.6	0.0
17	2.4	16.9	77.0*	3.6	0.1	0.0
18	10.5	8.3	6.2	74.6*	0.3	0.0
19	2.7	92.4*	3.6	1.4	0.0	0.0
20	76.2*	6.8	10.2	6.8	0.0	0.0
21	46.4*	39.9	11.4	1.8	0.5	0.0
22	30.5	49.9*	10.5	8.3	0.7	0.0
23	79.4*	7.4	10.3	2.7	0.2	0.0
24	56.6*	23.6	12.8	5.9	1.0	0.0
25	3.1	6.9	8.6	81.4*	0.0	0.0
26	29.6	56.9*	6.8	5.9	0.8	0.0
27	6.2	89.4*	3.0	1.4	0.0	0.0
28	16.5	14.7	66.4*	2.1	0.3	0.0
29	20.8	13.8	51.7*	13.2	0.6	0.0
30	7.9	11.3	14.3	66.2*	0.2	0.0
31	5.4	3.9	88.1*	2.5	0.0	0.0
32	15.0	6.5	60.1*	17.6	0.8	0.0
33	9.6	48.2*	11.4	30.2	0.6	0.0
34	11.4	26.0	7.6	54.7*	0.2	0.0
35	74.5*	5.3	13.2	6.8	0.2	0.0
36	10.4	2.3	12.0	74.6*	0.6	0.1
37	8.2	9.6	8.4	73.3*	0.5	0.0
38	13.6	6.1	75.4*	4.5	0.3	0.0
39	10.9	81.5*	5.4	1.8	0.3	0.0
40	7.3	5.3	5.2	81.4*	0.8	0.0

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

PERCENTAGE OF STUDENTS AT EACH SCORE VALUE

PART B - LONG ANSWER
(NR = no response)
(n = number of students responding)

MARKS AWARDED

N = 865

Question	n	Maximum Score	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	NR
1	846	5	3.2	3.5	4.6	5.5	3.7	2.1	3.1	1.0	3.0	15.5	52.5	2.2
2	843	2	13.5	19.0	2.1	5.0	57.9							2.5
3a	847	1	53.8	5.8	38.4									2.1
3b	842	2	13.6	41.4	34.6	2.9	4.9							2.7
4	839	3	17.0	9.7	16.6	8.3	16.2	10.5	18.6					3.0
5	771	2	45.4	1.8	24.6	0.6	16.6							10.9
6	815	3	17.3	14.3	17.0	1.8	11.2	3.6	28.9					5.8
7	798	3	32.8	10.3	10.9	3.8	17.7	1.7	15.0					7.7
8	837	3	10.3	13.4	7.4	5.7	7.2	5.2	47.6					3.2
9	840	2	19.1	14.5	5.8	15.8	42.0							2.9
10	832	2	26.8	5.0	13.6	11.1	39.7							3.8
11	855	5	8.4	0.7	2.4	1.0	3.1	6.7	3.0	5.8	12.5	27.2	28.0	1.2
12	859	5	8.9	1.0	10.5	2.2	6.9	2.5	7.5	1.7	6.1	10.3	41.5	0.7
13	799	4	65.2	3.0	2.5	1.4	3.0	0.6	3.9	2.3	10.4			7.6
14	822	3	15.3	1.6	12.1	9.7	10.2	7.5	38.6					5.0
15	829	4	22.9	3.9	15.8	2.0	5.1	5.3	10.1	6.4	24.4			4.2
16	754	4	21.2	1.4	11.9	1.5	4.3	2.7	2.8	2.2	39.3			12.8
17	811	2	8.9	8.3	26.6	7.2	42.8							6.2
18	692	2	23.8	2.9	13.5	16.3	23.5							20.0
19	722	3	31.0	6.6	14.5	3.5	5.2	5.8	17.0					16.5

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

FREQUENCY DISTRIBUTION OF TOTAL RAW SCORES

Raw Score (Max=100Mks)	Frequency (# of students)	Cumulative Frequency	Percentage	Cumulative Percentage
98.0	4	4	0.46	0.46
97.0	2	6	0.23	0.69
96.5	7	13	0.81	1.50
96.0	3	16	0.35	1.85
95.5	2	18	0.23	2.08
95.0	2	20	0.23	2.31
94.5	3	23	0.35	2.66
94.0	3	26	0.35	3.01
93.5	6	32	0.69	3.70
93.0	7	39	0.81	4.51
92.5	1	40	0.12	4.62
92.0	1	41	0.12	4.74
91.5	4	45	0.46	5.20
91.0	3	48	0.35	5.55
90.5	4	52	0.46	6.01
90.0	1	53	0.12	6.13
89.5	4	57	0.46	6.59
89.0	8	65	0.92	7.51
88.5	2	67	0.23	7.75
88.0	1	68	0.12	7.86
87.5	9	77	1.04	8.90
87.0	7	84	0.81	9.71
86.5	1	85	0.12	9.83
86.0	5	90	0.58	10.40
85.5	7	97	0.81	11.21
85.0	4	101	0.46	11.68
84.5	2	103	0.23	11.91
84.0	1	104	0.12	12.02
83.5	4	108	0.46	12.49
83.0	7	115	0.81	13.29
82.5	5	120	0.58	13.87
82.0	3	123	0.35	14.22
81.5	7	130	0.81	15.03
81.0	6	136	0.69	15.72
80.5	5	141	0.58	16.30
80.0	9	150	1.04	17.34
79.5	7	157	0.81	18.15
79.0	9	166	1.04	19.19
78.5	5	171	0.58	19.77

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

FREQUENCY DISTRIBUTION OF TOTAL RAW SCORES

Raw Score (Max=100Mks)	Frequency (# of students)	Cumulative Frequency	Percentage	Cumulative Percentage
78.0	4	175	0.46	20.23
77.5	8	183	0.92	21.16
77.0	4	187	0.46	21.62
76.5	5	192	0.58	22.20
76.0	10	202	1.16	23.35
75.5	9	211	1.04	24.39
75.0	2	213	0.23	24.62
74.5	7	220	0.81	25.43
74.0	5	225	0.58	26.01
73.5	5	230	0.58	26.59
73.0	7	237	0.81	27.40
72.5	6	243	0.69	28.09
72.0	5	248	0.58	28.67
71.5	7	255	0.81	29.48
71.0	5	260	0.58	30.06
70.5	7	267	0.81	30.87
70.0	11	278	1.27	32.14
69.5	6	284	0.69	32.83
69.0	6	290	0.69	33.53
68.5	6	296	0.69	34.22
68.0	13	309	1.50	35.72
67.5	8	317	0.92	36.65
67.0	3	320	0.35	36.99
66.5	8	328	0.92	37.92
66.0	10	338	1.16	39.08
65.5	3	341	0.35	39.42
65.0	16	357	1.85	41.27
64.5	17	374	1.97	43.24
64.0	9	383	1.04	44.28
63.5	2	385	0.23	44.51
63.0	10	395	1.16	45.66
62.5	7	402	0.81	46.47
62.0	7	409	0.81	47.28
61.5	7	416	0.81	48.09
61.0	9	425	1.04	49.13
60.5	13	438	1.50	50.64
60.0	11	449	1.27	51.91
59.5	10	459	1.16	53.06
59.0	11	470	1.27	54.34

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

FREQUENCY DISTRIBUTION OF TOTAL RAW SCORES

Raw Score (Max=100Mks)	Frequency (# of students)	Cumulative Frequency	Percentage	Cumulative Percentage
58.5	8	478	0.92	55.26
58.0	6	484	0.69	55.95
57.5	8	492	0.92	56.88
57.0	8	500	0.92	57.80
56.5	8	508	0.92	58.73
56.0	4	512	0.46	59.19
55.5	13	525	1.50	60.69
55.0	7	532	0.81	61.50
54.5	10	542	1.16	62.66
54.0	12	554	1.39	64.05
53.5	5	559	0.58	64.62
53.0	3	562	0.35	64.97
52.5	10	572	1.16	66.13
52.0	11	583	1.27	67.40
51.5	8	591	0.92	68.32
51.0	8	599	0.92	69.25
50.5	3	602	0.35	69.60
50.0	5	607	0.58	70.17
49.5	7	614	0.81	70.98
49.0	5	619	0.58	71.56
48.5	8	627	0.92	72.49
48.0	3	630	0.35	72.83
47.5	5	635	0.58	73.41
47.0	10	645	1.16	74.57
46.5	8	653	0.92	75.49
46.0	10	663	1.16	76.65
45.5	8	671	0.92	77.57
45.0	5	676	0.58	78.15
44.5	4	680	0.46	78.61
44.0	4	684	0.46	79.08
43.5	3	687	0.35	79.42
43.0	7	694	0.81	80.23
42.5	5	699	0.58	80.81
42.0	11	710	1.27	82.08
41.5	6	716	0.69	82.77
41.0	7	723	0.81	83.58
40.5	4	727	0.46	84.05
40.0	2	729	0.23	84.28
39.5	2	731	0.23	84.51

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

FREQUENCY DISTRIBUTION OF TOTAL RAW SCORES

Raw Score (Max=100Mks)	Frequency (# of students)	Cumulative Frequency	Percentage	Cumulative Percentage
39.0	2	733	0.23	84.74
38.5	7	740	0.81	85.55
38.0	4	744	0.46	86.01
37.5	6	750	0.69	86.71
37.0	4	754	0.46	87.17
36.5	6	760	0.69	87.86
36.0	7	767	0.81	88.67
35.5	4	771	0.46	89.13
35.0	5	776	0.58	89.71
34.5	3	779	0.35	90.06
34.0	7	786	0.81	90.87
33.5	3	789	0.35	91.21
33.0	5	794	0.58	91.79
32.5	2	796	0.23	92.02
32.0	4	800	0.46	92.49
31.5	1	801	0.12	92.60
31.0	3	804	0.35	92.95
30.5	5	809	0.58	93.53
30.0	1	810	0.12	93.64
29.0	4	814	0.46	94.10
28.5	3	817	0.35	94.45
28.0	6	823	0.69	95.14
27.5	1	824	0.12	95.26
27.0	4	828	0.46	95.72
26.5	2	830	0.23	95.95
26.0	6	836	0.69	96.65
25.5	3	839	0.35	96.99
25.0	2	841	0.23	97.23
24.5	4	845	0.46	97.69
23.5	3	848	0.35	98.03
23.0	2	850	0.23	98.27
22.5	1	851	0.12	98.38
21.0	1	852	0.12	98.50
20.5	1	853	0.12	98.61
19.5	1	854	0.12	98.73
19.0	1	855	0.12	98.84
18.5	1	856	0.12	98.96
17.0	2	858	0.23	99.19
16.5	1	859	0.12	99.31

PROVINCIAL EXAMINATION - PROVINCIAL SUMMARY REPORT

MATHEMATICS 40S - January 2000

FREQUENCY DISTRIBUTION OF TOTAL RAW SCORES

Raw Score (Max=100Mks)	Frequency (# of students)	Cumulative Frequency	Percentage	Cumulative Percentage
14.5	1	860	0.12	99.42
13.5	1	861	0.12	99.54
13.0	1	862	0.12	99.65
11.5	1	863	0.12	99.77
11.0	1	864	0.12	99.88
7.0	1	865	0.12	100.00

MATHEMATICS 40G

Provincial Examination

January 18, 2000

Manitoba
Education
and Training

MATHEMATICS 40G PROVINCIAL EXAMINATION

DESCRIPTION

Total Possible Marks: 100 **Time: 3 hours**

This examination consists of three parts:

	Description	Suggested Time to Complete	Value
Part A	Contains 30 multiple-choice questions worth 1.5 marks each.	70 minutes	45%
Part B	Contains 6 short answer questions worth 1 mark each and 7 short answer questions worth 2 marks each.	40 minutes	20%
Part C	Contains 13 long-answer questions worth a total of 35 marks.	70 minutes	35%

The formula sheet and the tables are found in the **"Formulas and Tables"** booklet that accompanies the examination booklet.

GENERAL DIRECTIONS

Please provide the following information on the Demographic Form. It is important that this information is both accurate and complete.

1. NAME (Last) — Print your last name in the spaces provided and fill in the corresponding circle below each letter.
2. NAME (First) — Print your first name in the spaces provided and fill in the corresponding circle below each letter.
3. PROGRAM INFORMATION — Fill in the circle that corresponds to the program in which you are currently registered.
4. PROVINCIAL STUDENT (MET) NO. — This is an identification number that may be in use in your school. If you have such a number, please write it in the spaces provided and fill in the appropriate circle below each number. If you do not have a provincial student number, please leave this space blank.
5. BIRTH DATE — Fill in the appropriate circles and write in the appropriate numbers.
6. BOOKLET NO. — This is the five-digit number on the front of your examination booklet. Write in your booklet number and fill in the corresponding circle below each number.
7. SCHOOL CODE — You will be provided with this four-digit number. Write in your school code and fill in the appropriate circle below each number.
8. GENDER — Fill in the appropriate circle.

- Read all instructions on the examination carefully.
- Use an approved scientific calculator (no graphing or programmable calculators).
- Do not fold the answer sheet or the examination booklet.
- Print your full name beside your booklet number on the Attendance Form that will be circulated during the examination.

PART A

INSTRUCTIONS

There are **30 multiple-choice questions** on this part of the examination. Each question is worth 1.5 marks.

Please read each question carefully and examine **all** the choices before you decide on your answer. Calculations may be done anywhere in Part A of the examination booklet. **Blacken** the circle that corresponds with the letter **(A, B, C or D)** of the answer that you have chosen. If you change your mind after you have answered the question, erase your first response completely and blacken the circle that you now have chosen. Each item must have one answer only. If you have marked more than one response for a question, you will receive a mark of zero for that question. There is no penalty for guessing. **Use an HB lead pencil**.

EXAMPLE

1. I am writing the examination for

   A) Mathematics 40G.

   B) Mathématiques 40G.

   C) Mathematics 40S.

   D) Mathématiques 40S.

ANSWER SHEET

A	B	C	D
●	②	③	④

DO NOT TURN THE PAGE TO START THE EXAMINATION UNTIL TOLD TO DO SO BY THE EXAMINATION SUPERVISOR.

NO MARKS WILL BE AWARDED FOR WORK DONE ON THIS PAGE

Additional pages can be found at the end of the booklet for your working convenience.

PART A
MULTIPLE-CHOICE

Value: 45 marks **Suggested Time: 70 minutes**

1. Simplify: $(-4a^3b^2)(6ab^3)$

   A) $-24a^3b^5$

   B) $-24a^4b^5$

   C) $-24a^3b^6$

   D) $24a^4b^5$

2. Simplify: $\dfrac{9^3 \cdot 9^{-5}}{9^{-6}}$

   A) 9^{-9}

   B) 9^{-8}

   C) 1^4

   D) 9^4

3. Solve: $5a + 3 = 2a - 7$

   A) $\dfrac{-10}{3}$

   B) $\dfrac{-10}{7}$

   C) $\dfrac{10}{7}$

   D) $\dfrac{10}{3}$

4. Write the product in scientific notation: $(2 \times 10^{5})(4 \times 10^{-2})$

A) 6×10^{-10}

B) 8×10^{-10}

C) 6×10^{3}

D) 8×10^{3}

5. Evaluate: $2^{-1} + \frac{1}{2}$

A) $-2\frac{1}{2}$

B) $-1\frac{1}{2}$

C) 1

D) $2\frac{1}{2}$

6. Expand and simplify: $(3x-5)(3x+7)$

A) $6x+2$

B) $9x^{2}-35$

C) $9x^{2}-6x-35$

D) $9x^{2}+6x-35$

7. If x represents an integer, then the next three consecutive integers are:

A) $x+1,\ x+2,\ x+3$

B) $x+1,\ x+3,\ x+5$

C) $x+2,\ x+4,\ x+6$

D) $x+3,\ x+5,\ x+7$

8. Solve the following system of equations for y: $-2x + 3y = 10$, $2x + 6y = 8$

A) -6

B) $\frac{-2}{3}$

C) $\frac{2}{9}$

D) 2

9. Which of the following points satisfies the equation of the line $3x - 2y = 1$?

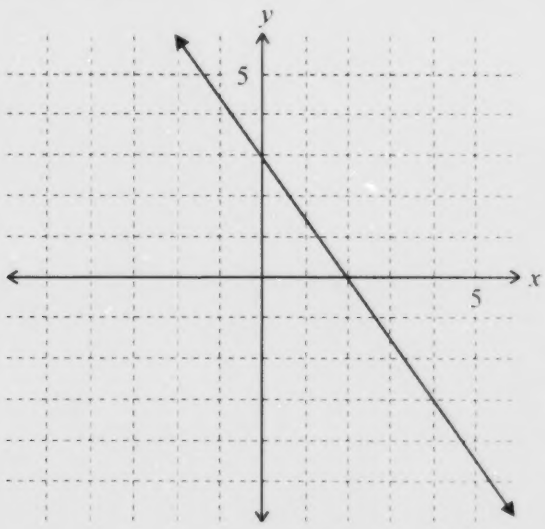
A) $(3, 4)$

B) $(4, 3)$

C) $(-4, -3)$

D) $(-3, -4)$

10. Which equation represents the line shown on the graph?



A) $y = \frac{-3}{2}x + 3$

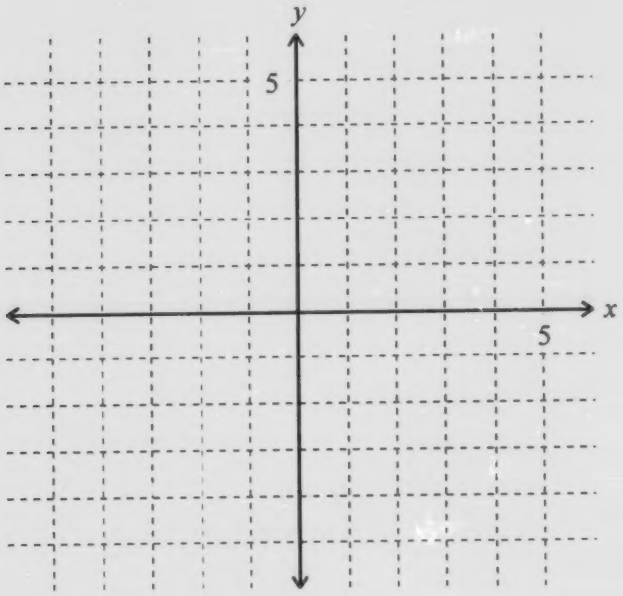
B) $y = \frac{-2}{3}x + 3$

C) $y = \frac{-3}{2}x + 2$

D) $y = \frac{2}{3}x + 2$

11. A line has a slope of $\frac{-2}{3}$ and a y-intercept of 1. Which one of the following points is on the line?

The grid is provided for your convenience if you wish to use it to help answer this question.



A) $(-1, 3)$

B) $(3, -1)$

C) $(-2, 1)$

D) $\left(\frac{-2}{3}, 1\right)$

12. The following table describes the relationship between the distance travelled and the amount of time travelled at a constant speed. Determine the constant of variation.

time	2	4	6	8
distance	140	280	420	560

A) 2

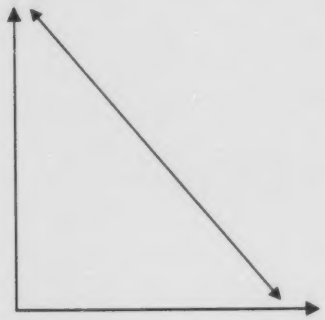
B) 70

C) 140

D) 280

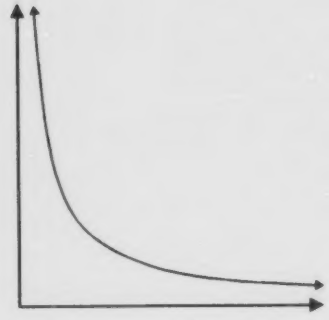
13. Which of the graphs below represents a direct variation?

A)

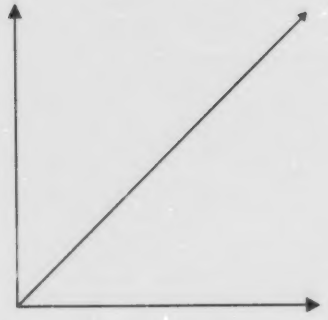


B)

C)



D)



14. What is the slope of the line $4x - 5y = 10$?

A) 2

B) -2

C) $-\frac{4}{5}$

D) $\frac{4}{5}$

15. What amount should appear on Line 4 of the MONTHLY BUDGET FORM?

A) $329.83

B) $659.67

C) $3958.00

D) $7916.00

MONTHLY BUDGET FORM

INCOME:			
Regular Annual Income	$	22 850.00	AVERAGE
Additional Annual Income		20 646.00	MONTHLY
Other Income		4 000.00	INCOME
TOTAL ANNUAL INCOME	$	47 496.00	1) $3 958.00
EXPENSES: MONTHLY FIXED EXPENSES			
Mortgage Payment or Rent	$	786.00	
Bank Loan		400.00	
Telephone		38.00	
Hydro		45.00	
Other Utilities		105.00	
Car Insurance		125.00	
Life Insurance		134.00	TOTAL
Property Taxes		189.50	MONTHLY
TOTAL FIXED EXPENSES	$	1 822.50	2) $1 822.50
EXPENSES: MONTHLY VARIABLE EXPENSES			
Groceries	$	750.00	
Clothing		250.00	
Car Maintenance		125.00	
Entertainment		200.00	
Vacations		250.00	TOTAL
Other: Publications etc.		40.00	MONTHLY
TOTAL VARIABLE EXPENSES	$	1 615.00	3) $1 615.00
RESERVE FUND			
Target Size (2 months' income)	$		
Monthly Deposit Required			4) $

16. What amount should appear on **line 234** of the T1 GENERAL below?

A) $2353.06

B) $19 884.40

C) $22 398.77

D) $27 104.89

Revenue Canada Revenu Canada

T1 GENERAL 1998

Income Tax and Benefit Return

This is your **total income.** 150 ➤ *24 751.83*

Net Income

Pension adjustment amount (box 52 on all T4 slips and box 34 on all T4A slips)	206	*2514.37*		
Registered pension plan deduction (box 20 on all T4 slips and box 32 on all T4A slips)	207	*1314.06*		
RRSP deduction (see Schedule 7; attach receipts)	208	+ *825.00*		
Annual union, professional, or like dues (box 44 on all T4 slips, or from receipts)	212	+ *214.00*		
Child care expenses (attach a completed Form T778)	214	+ *0.00*		
Attendant care expenses (see line 215 in the guide)	215	+ *0.00*		
Business investment loss (see line 217 in the guide) Gross 228 Allowable deduction	217	+ *0.00*		
Moving expenses (see line 219 in the guide)	219	+ *0.00*		
Other employment expenses (see line 229 in the guide)	229	+ *0.00*		
Other deductions (see line 232 in the guide) Specify:	232	+ *0.00*		
Add lines 207 to 219, 229 and 232.	233	=	➤	−
Line 150 minus line 233 (if negative, enter "0"). This is your **net income before adjustments.**	234	=		

17. What amount should appear on **Line 15** of the Federal Tax Calculation below?

A) $2173.82

B) $4454.09

C) $6734.36

D) $23 920.23

T1-1998 **Federal Tax Calculation** **Schedule 1**

Enter your **taxable income** from line 260 of your return — *26 200.50* — 1

Part 1 — Complete ONE of the following sections

SECTION I – Complete this section if line 1 is **$29,590.00 or less**

Enter the amount from line 1 — × 17% is — = — 2

Go to Part 2

SECTION II – Complete this section if line 1 is **more than $29,590.00, but not more than $59,180.00**

Enter the amount from line 1 — 3

Tax on the first — − $29,590.00 — 4 — is — $5,030.00 — 5

Tax on the remaining (line 3 minus line 4) — = — × 26% is — + — 6

Add lines 5 and 6 — = — 7

Go to Part 2

SECTION III – Complete this section if line 1 is **more than $59,180.00**

Enter the amount from line 1 — 8

Tax on the first — − $59,180.00 — 9 — is — $12,724.00 — 10

Tax on the remaining (line 8 minus line 9) — = — × 29% is — + — 11

Add lines 10 and 11 — = — 12

Go to Part 2

Part 2

Method A (lines 13 to 15)

Federal tax:

Enter the amount from either line 2, 7, or 12 above, whichever applies — 13

Total non-refundable tax credits: Enter the amount from line 350 of your return — − *2280.27* — 14

Federal tax: Line 13 minus line 14; if negative, enter "0"

Enter this amount on line 406 of your return. — = — 15

18. Using the statement of adjustments below, calculate the amount of the mortgage.

A) $0.00

B) $44 430.00

C) $61 520.00

D) $103 000.00

Particulars	Charged to Buyer	Credited to Buyer
Purchase price	$105 000.00	
Deposit on purchase		$2 000.00
Mortgage		$ _____
Mortgage interest		240.00
Taxes	950.00	
Balance due to seller		42 190.00
	$105 950.00	$105 950.00

19. Roberta has a yearly gross income of $42 000.00. Her deductions total 30% of her gross income. What is her **monthly** net income?

A) $1050.00

B) $2450.00

C) $12 600.00

D) $29 400.00

20. Calculate the **annual** premium for a "15 YEAR TERM" life insurance policy with a face value of $65 000.00 issued at age 25.

A) $274.95

B) $280.15

C) $966.55

D) $2801.50

21. A homeowner took out a mortgage of $78 000.00 at 7¾% interest. Calculate the amount of interest that must be paid at the end of the first month.

A) $50.38

B) $503.75

C) $604.50

D) $6045.00

22. Determine the median of the data below.

53, 33, 53, 25, 47, 23, 60

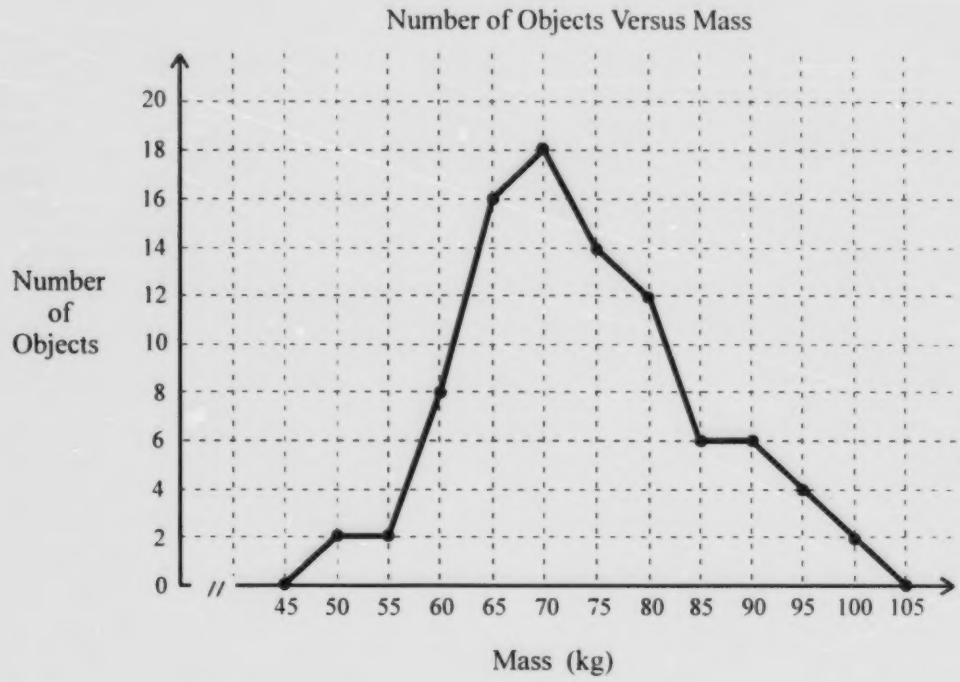
A) 25

B) 42

C) 47

D) 53

23. Determine the total number of objects represented in the frequency polygon below.



A) 18

B) 70

C) 90

D) 105

24. Calculate the difference between the mode and the range for the data below.

22, 18, 20, 17, 20, 25, 16, 19

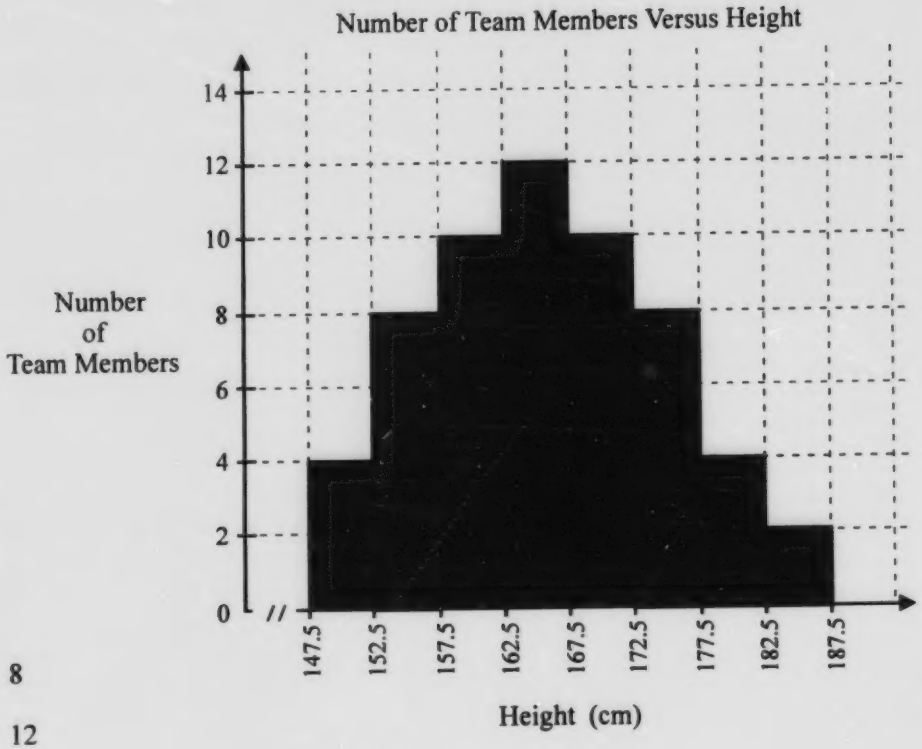
A) 9

B) 10.5

C) 11

D) 20

25. Given the histogram below, determine the mode.



A) 8

B) 12

C) 160

D) 165

26. Calculate the mean of the data below.

47, 53, 60, 47, 61, 39, 66, 51

A) 31

B) 47

C) 52

D) 53

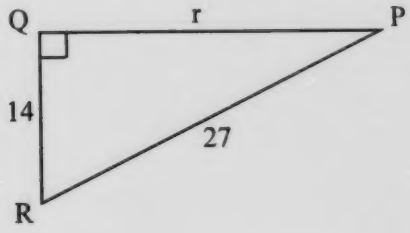
27. In $\triangle PQR$, $\angle Q = 90°$, $p = 14$ and $q = 27$. Calculate the length of PQ.

A) 13.0

B) 23.1

C) 30.4

D) 31.2



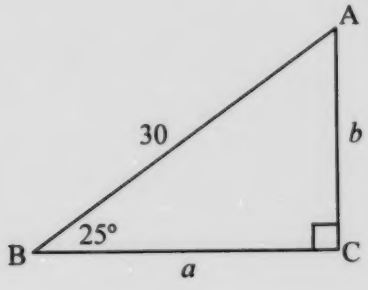
28. In $\triangle ABC$, $\angle C = 90°$, $\angle B = 25°$ and $c = 30$. Calculate the length of AC.

A) 12.5

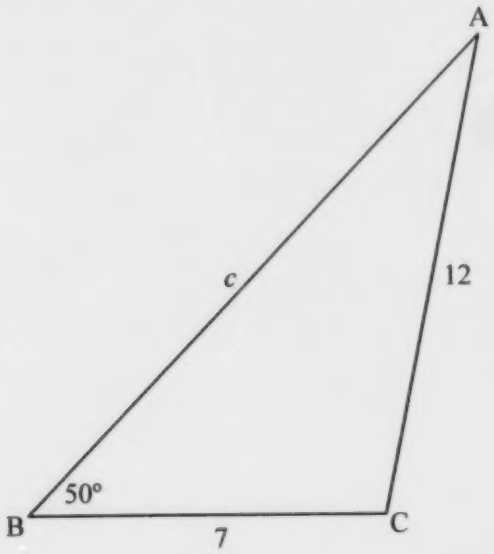
B) 12.7

C) 14.0

D) 27.2



29. Which of the following equations could be used to determine the measure of $\angle A$ in $\triangle ABC$?



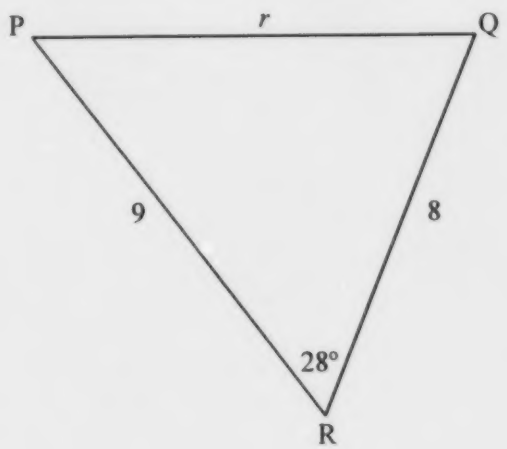
A) $\dfrac{7}{\sin A} = \dfrac{12}{\sin 50^\circ}$

B) $\dfrac{7}{\sin 50^\circ} = \dfrac{12}{\sin A}$

C) $a^2 = 7^2 + 12^2 - 2(7)(12)\cos 50^\circ$

D) $\dfrac{12}{\sin A} = \dfrac{7}{\sin C}$

30. Which of the following equations could be used to determine the value of r in $\triangle PQR$?



A) $r^2 = 9^2 + 8^2$

B) $\dfrac{r}{\sin 28^\circ} = \dfrac{8}{\sin Q}$

C) $r^2 = 9^2 + 8^2 - 2(9)(8)\cos 28^\circ$

D) $\dfrac{r}{8} = \sin 28^\circ$

PART B

INSTRUCTIONS

In this part of the examination there are:

- **6 short answer questions worth 1 mark each and**
- **7 short answer questions worth 2 marks each.**

Read each question carefully.

In Part B, work need not be shown in order to obtain full marks for a correct answer. However, all work shown will be taken into consideration.

Do not write in the **DO NOT USE** column on the right hand side.

START PART B IMMEDIATELY

DO NOT USE

PART B

Value: 20 marks **Suggested time: 40 minutes**

1. If $x = 3$, determine the value of y in the equation $4x + 3y = 27$.

1 mark

ANSWER FOR # 1 101

2. Simplify: $\dfrac{12x^3 - 6x^2 + 2x}{2x}$

1 mark

ANSWER FOR # 2 102

3. Simplify: $2x(x+3) - 3(5x-4) + 10$

2 marks

ANSWER FOR # 3 103

DO NOT USE

4. A family takes out a mortgage of $62 000.00 at 6¾% amortized over 10 years with equal monthly payments. What will be the total amount paid over the life of the mortgage?

2 marks

ANSWER FOR # 4 104

5. Two homes have the following features in common for insurance purposes:
   - both are insured for $150 000.00,
   - both owners qualify for "STANDARD RATES", and
   - both owners want a $500.00 deductible.

   One home is in Metro Winnipeg, and the other is in rural Manitoba (Table 1).
   How much more does it cost to insure the Winnipeg home?

2 marks

ANSWER FOR # 5 105

DO NOT USE

6. A town has a total assessed value of $33 500 000.00. If $1 139 000.00 must be raised from property taxes, what mill rate must be set?

2 marks

ANSWER FOR # 6 106

7. A home was purchased for $84 000.00 with a down payment of $15 000.00. Complete the table.

1 mark

107

Date	Regular Payment			Unpaid Balance	Owner's Equity
	Principal	Interest	Total		
Start				$69 000.00	$15 000.00
End of first month	$200.00	$488.75	$688.75		

8. A factory has an assessed value of $2 196 000.00 and the local mill rate is 34.7 mills. If there is an additional charge of $5814.00 for local improvements, how much is the property tax bill?

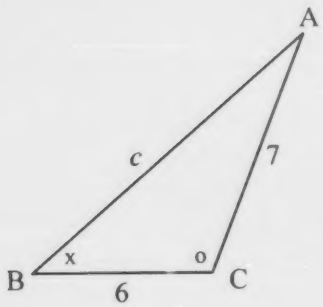
2 marks

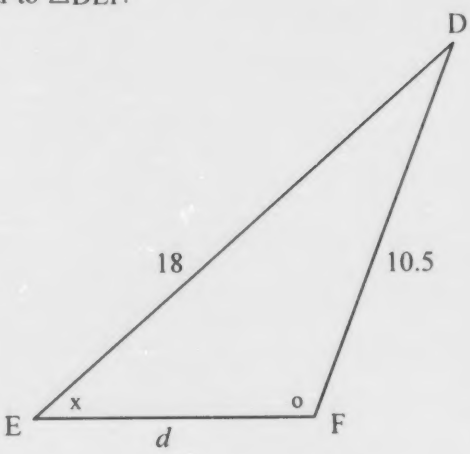
ANSWER FOR # 8 108

DO NOT USE

9. In the diagram below, $\triangle ABC$ is similar to $\triangle DEF$. Determine the length of AB.

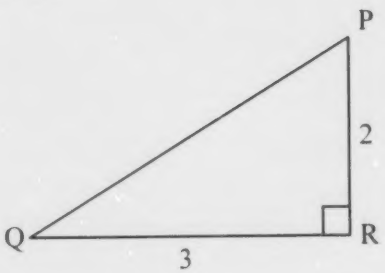
2 marks





ANSWER FOR # 9 109

10. In $\triangle PQR$, $\angle R = 90°$, $q = 2$ and $p = 3$. Determine the measure of $\angle P$ to **one decimal place**.



2 marks

ANSWER FOR # 10 110

DO NOT USE

11. a) Complete the table below.

1 mark

111

Class Boundaries	Class Mark x	Frequency f	Cumulative Frequency	$f \cdot x$
26.5 - 33.5		5	5	150
33.5 - 40.5	37	7	12	259
40.5 - 47.5	44	7	19	308
47.5 - 54.5	51	8	27	408
54.5 - 61.5	58	10	37	580
61.5 - 68.5	65	3	40	
	Total	40		1900

b) Calculate the mean for the grouped data to **one decimal place**.

1 mark

ANSWER FOR # 11 b) 112

c) What are the boundaries of the class containing the median?

1 mark

ANSWER FOR # 11 c) 113

PART C

INSTRUCTIONS

In this part of the examination there are **13 questions for a total of 35 marks.**

Write each solution **in the examination booklet.** Write as neatly as possible. Make sure that you organize and show all work (diagrams, calculations, explanations, and formulas) in the space provided. You will receive full marks **only** by showing relevant work and providing the correct answer. Part marks will be awarded for partially correct responses.

Do not write in the **DO NOT USE** column on the right hand side.

Use the blank pages at the back for rough work only. (No marks will be awarded for work done on these pages.)

START PART C IMMEDIATELY

DO NOT USE

PART C

Value: 35 marks **Suggested time: 70 minutes**

1. Solve: $\frac{1+8x}{2} + 4 = 3(x-4)$

3 marks

ANSWER FOR # 1 114

2. P varies directly with T. If $P = 30$ when $T = 25$, what is the value of P when $T = 150$?

2 marks

ANSWER FOR # 2 115

DO NOT USE

3. The perimeter of a rectangle is 46. The length is 5 more than twice the width. What are the dimensions of the rectangle?
(Only algebraic solutions will be awarded full marks.)

3 marks

ANSWER FOR # 3 116

4. The cost of placing an advertisement in a newspaper is the sum of two quantities; the first is fixed, and the other varies directly with the number of words in the advertisement. It costs $7.00 to place a 20-word advertisement, and $9.50 to place a 30-word advertisement. Calculate the cost to place a 45-word advertisement.

4 marks

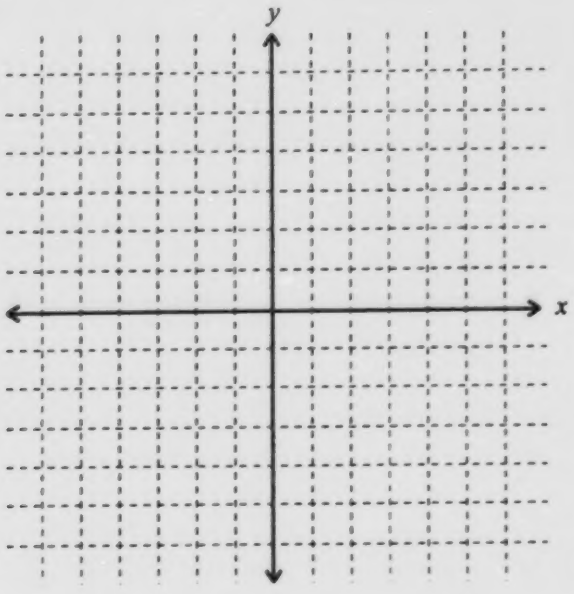
ANSWER FOR # 4 117

DO NOT USE

5. Determine the solution to the following system of equations by **graphing**.

$2x + y = 4$

$y = x - 5$



3 marks

ANSWER FOR # 5 118

6. A building was valued at \$115 000.00 and insured for \$85 000.00 with an 80% co-insurance clause. If a fire caused \$75 000.00 worth of damage, how much will the insurance company pay?

2 marks

ANSWER FOR # 6 119

DO NOT USE

7. The Manitoba Tax Credit form below is part of a return for a young couple with **two dependent children**. No one in the family qualifies for a disability claim.

Complete the Manitoba Tax Credit Program for lines **3** and **13 to 16**.

120

3 marks

Manitoba

Manitoba Tax Credit Programs — T1C (MAN.) - 1998

Net family income for the cost-of-living and property tax credits

Enter your net income from line 236 of your return.		24 951.43	1
Enter your spouse's net income from line 236 of your spouse's return.	6030	+ 31 475.28	2
Add line 1 and line 2. **Net family income for the cost-of-living and property tax credits**		=	3

Cost-of-living tax credit

Basic credit				190.00	4
Age credit for self (if born 1933 or earlier)	claim $110			+ 0.00	5
Basic credit for spouse	claim $190	190.00			6
Age credit for spouse (if born 1933 or earlier)	claim $110	+			7
Disability credit for spouse	claim $110	+			8
Add lines 6 to 8.	6090	= 190.00	➤	+ 190.00	9
Equivalent-to-spouse credit	claim $190			+ 0.00	10
Disability credit for self or for a dependant other than your spouse — Number of disability claims	6095	0 × $110 =		+ 0.00	11
Credit for disabled dependants — Number of disabled dependants	6097	0 × $60 =		+ 0.00	12
Credit for dependent children born 1980 or later — Number of children	6099	2 × $25 =		+	13
Add the amounts on lines 4, 5, and 9 to 13.	Total credits	6105		=	14
Amount on line 3	× 1% =			−	15
Line 14 minus line 15 (if negative enter "0")	**Cost-of-living tax credit**			=	16

DO NOT USE

8. Calculate the annual premium for a "CONDOMINIUM CONTENTS INSURANCE" policy for a condominium located in Metro Winnipeg with an insured value of $126 000.00 and $500.00 deductible.

2 marks

ANSWER FOR # 8 121

9. A home was purchased for $97 000.00 with a $16 000.00 down payment and the balance was financed with a mortgage at 8¼% amortized over 20 years with equal monthly payments. Complete the table.

Date	Regular Payment			Unpaid Balance	Owner's Equity
	Principal	Interest	Total		
Start				$81 000.00	$16 000.00
End of first month					

3 marks

Show the calculation of the interest here.

Show the calculation of the monthly payment here. 122

DO NOT USE

10. A couple earns the following salaries:

Spouse #1		Spouse #2	
Gross Annual Salary	$48 900.00	Gross Weekly Salary	$807.10
Total Annual Deductions	$19 560.00	Net Weekly Salary	$565.40

Use the excerpt from the budget form below to calculate the **average net monthly** income for the family. (Assume a 52 work-week year.)

Regular Net Annual Income Spouse # 1 $_____

Spouse # 2 $_____

Total Net Annual Income $_____

123

3 marks

Average Net Monthly Income $_____

11. A 21 year old individual purchases an $80 000.00 "ENDOWMENT TO AGE 65" life insurance policy. Calculate the quarterly premiums.

2 marks

ANSWER FOR # 11

124

DO NOT USE

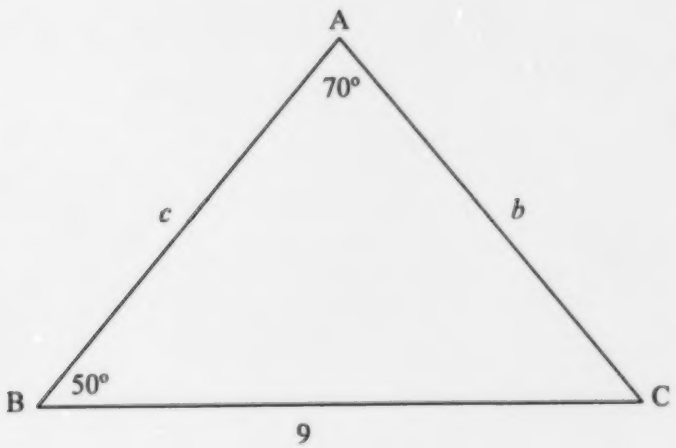
12. Calculate the mean deviation for the data below.
The mean of the data is 60.

61, 56, 61, 62, 62, 58

2 marks

ANSWER FOR # 12 125

13. In $\triangle ABC$, $\angle A = 70°$, $\angle B = 50°$ and $a = 9$.
Determine the value of c to **one decimal place**.



3 marks

ANSWER FOR # 13 126

NO MARKS WILL BE AWARDED FOR WORK DONE ON THIS PAGE

- **CHECK OVER YOUR TEST TO ENSURE THAT ALL QUESTIONS HAVE BEEN ATTEMPTED. TIME PERMITTING CHECK YOUR WORK.**

- **ENSURE THAT CORRESPONDING RESPONSES HAVE BEEN PROPERLY CODED ON THE ANSWER SHEET FOR PART A.**

- **CHECK TO ENSURE THAT YOUR NAME, BIRTHDATE, BOOKLET ID NUMBER, SCHOOL CODE, GENDER, PROVINCIAL STUDENT NUMBER, AND PROGRAM INFORMATION ARE FILLED IN ACCURATELY AND THAT THE APPROPRIATE CIRCLES ARE BLACKENED ON THE ANSWER SHEET.**

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MATHEMATICS 40G

Provincial Examination

Formulas and Tables

2000

Manitoba
Education and
Training

FORMULA SHEET

TRIGONOMETRY

RIGHT TRIANGLE	LAW OF SINES	LAW OF COSINES
$\sin\theta = \frac{opposite}{hypotenuse}$ $\cos\theta = \frac{adjacent}{hypotenuse}$ $\tan\theta = \frac{opposite}{adjacent}$	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$	$a^2 = b^2 + c^2 - 2bc\cos A$ $\cos A = \frac{b^2 + c^2 - a^2}{2bc}$

STATISTICS

UNGROUPED DATA	GROUPED DATA
$\bar{x} = \frac{\sum x}{n}$	$\bar{x} = \frac{\sum f \cdot x}{n}$
M. D. $= \frac{\sum \lvert \bar{x} - x \rvert}{n}$	M. D. $= \frac{\sum f \cdot \lvert \bar{x} - x \rvert}{n}$

LINEAR FUNCTIONS

SLOPE	SLOPE - INTERCEPT FORM OF EQUATION
$m = \frac{y_2 - y_1}{x_2 - x_1}$	$y = mx + b$

PARTIAL VARIATION	SIMPLE INTEREST
$C = F + kn$	$I = Prt$

CO-INSURANCE FORMULA

$$\text{Amount paid} = \frac{\text{face value of policy}}{\text{80\% of the property value}} \times \text{loss}$$

PROPERTY TAXES

Property Tax = Assessed Value × Rate

or

Municipal Budget Requirements = Assessed Value × Rate

LIFE INSURANCE PREMIUM RATE TABLE

Annual premiums per $1000 worth of insurance.

AGE AT ISSUE	TERM		WHOLE LIFE TO AGE 65	LIMITED PAYMENT TO 65	ENDOWMENT	
	10 YEAR	15 YEAR			TO 60	TO 65
15	3.58	4.08	11.14	11.82	14.35	14.98
16	3.64	4.10	11.48	12.21	14.95	15.86
17	3.70	4.13	11.82	12.60	15.34	16.74
18	3.76	4.15	12.16	12.99	15.84	17.62
19	3.83	4.17	12.50	13.38	16.34	18.50
20	3.90	4.20	12.84	13.77	16.84	19.37
21	3.96	4.22	13.25	14.26	17.48	20.17
22	4.02	4.24	13.66	14.75	18.13	20.97
23	4.09	4.26	14.07	15.24	18.78	21.77
24	4.16	4.28	14.48	15.73	19.45	22.37
25	4.23	4.31	14.87	16.23	20.07	23.38
26	4.29	4.42	15.39	16.90	20.92	24.48
27	4.36	4.53	15.91	17.58	21.77	25.58
28	4.43	4.64	16.44	18.26	22.62	26.68
29	4.50	4.75	16.97	18.94	23.48	27.79
30	4.57	4.86	17.48	19.61	23.34	28.90
31	4.74	5.10	18.15	20.54	25.52	30.49
32	4.91	5.34	18.83	21.47	26.70	32.08
33	5.09	5.58	19.51	22.40	27.88	33.67
34	5.27	5.82	20.20	23.32	29.05	35.26
35	5.46	6.05	20.87	24.24	30.22	36.85
36	5.78	6.44	21.71	25.51	31.88	39.21
37	6.10	6.83	22.56	26.78	33.55	41.57
38	6.42	7.22	23.41	28.05	35.23	43.93
39	6.74	7.61	24.26	29.32	36.90	46.29
40	7.10	8.00	25.10	30.61	38.55	48.65
41	7.58	8.60	26.20	32.50	41.00	52.49
42	8.06	9.20	27.30	34.39	43.45	56.13
43	8.54	9.80	28.40	36.28	45.90	60.17
44	9.02	10.40	29.50	38.17	48.34	64.00
45	9.53	10.99	30.60	40.05	50.82	67.83
46	10.28	12.00	32.02	43.07	54.74	75.25
47	11.03	13.01	33.44	46.09	58.66	82.67
48	11.78	14.02	34.86	49.11	62.58	90.09
49	12.53	15.03	36.28	52.13	66.50	97.50
50	13.32	16.04	37.72	55.15	70.41	104.91
51	14.75	17.70	39.58	60.86	77.97	
52	16.18	19.36	41.44	66.57	85.53	
53	17.61	21.02	43.30	72.28	93.09	
54	19.04	22.68	45.16	77.99	100.64	
55	20.47	24.34	47.02	83.68	108.19	
56	22.81	25.90	49.60			
57	25.15	27.46	52.18			
58	27.49	29.02	54.76			
59	29.83	30.59	57.35			
60	32.17	32.17	59.94			

Periodic Payments

Semi-Annual: × 0.51
Quarterly: × 0.26
Monthly: × 0.087

ANNUAL PREMIUMS
TENANTS/CONDOMINIUM CONTENTS INSURANCE

Insured Value ($)	TENANTS				CONDOMINIUM OWNERS			
	Metro Winnipeg		All Other Tables		Metro Winnipeg		All Other Tables	
	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.
20 000	282	190	199	123				
25 000	308	206	220	148				
30 000	335	237	250	162	265	191	252	178
35 000	332	260	268	186	271	198	257	183
40 000	358	281	274	197	278	205	268	194
45 000	376	300	289	218	318	235	291	218
50 000	391	319	307	235	338	256	310	234
55 000	418	344	323	247	355	278	330	256
60 000	449	376	338	263	371	296	353	277
65 000	479	407	359	282	400	328	378	305
70 000	508	431	381	304	428	354	404	331
75 000	539	462	403	329	453	379	428	356
80 000	569	491	428	350	478	402	452	375
85 000	599	527	449	374	504	427	475	402
90 000	628	555	470	392	530	458	497	427
95 000	656	585	492	419	554	481	521	448
100 000	684	608	512	432	580	507	545	471
105 000	711	634	536	460	605	531	581	508
110 000	736	660	559	484	629	554	613	539
115 000	764	688	584	509	655	580	638	568
120 000	800	726	610	535	682	607	660	587
Each Additional $1000	6	6	4	4	5	5	5	5

ANNUAL PREMIUMS

HOMEOWNER **"SELECT RATES"**

(STANDARD COVER WITH EXTENDED O.L.S.)

	Metro		Table 1		Table 2		Table 3	
Insured Value ($)	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.
80 000	400	325	194	171	313	276	374	335
85 000	421	346	206	182	331	293	397	350
90 000	434	359	216	191	348	306	418	372
95 000	447	372	227	203	366	324	440	386
100 000	487	412	238	215	385	345	461	408
105 000	510	435	249	221	403	352	484	428
110 000	533	458	259	228	419	370	504	446
120 000	579	504	279	247	455	401	546	486
130 000	625	550	301	266	489	435	588	521
140 000	670	595	321	284	525	464	631	557
150 000	717	642	341	301	560	497	672	593
160 000	763	688	360	318	597	529	715	630
170 000	807	732	382	338	631	555	757	672
180 000	853	778	402	353	667	592	798	708
190 000	897	822	423	374	701	621	841	743
200 000	943	868	443	395	735	650	881	780
210 000	978	903	464	410	771	682	924	818
220 000	1014	939	485	428	806	713	967	855
230 000	1050	975	505	443	842	745	1010	897
240 000	1086	1011	524	464	876	772	1051	933
250 000	1122	1047	546	483	912	806	1094	969
260 000	1157	1082	566	501	947	837	1136	1006
270 000	1193	1118	586	518	982	866	1177	1042
280 000	1228	1153	608	535	1017	902	1219	1082
290 000	1263	1188	628	555	1053	931	1262	1115
Each Additional $5000	18	18	10	10	15	15	19	19

ANNUAL PREMIUMS

HOMEOWNER **"STANDARD RATES"**

(STANDARD COVER WITH EXTENDED O.L.S.)

	Metro		Table 1		Table 2		Table 3	
Insured Value ($)	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.	$200 Ded.	$500 Ded.
80 000	449	376	224	196	358	315	431	380
85 000	473	395	236	203	379	332	455	401
90 000	491	418	249	221	400	354	481	424
95 000	509	433	261	234	423	372	505	449
100 000	550	478	273	242	443	391	530	465
105 000	576	501	286	251	463	412	555	490
110 000	601	523	296	260	484	429	579	513
120 000	652	579	321	285	522	466	626	554
130 000	704	632	345	301	563	499	676	599
140 000	756	686	368	321	603	532	724	645
150 000	807	735	391	343	644	570	772	681
160 000	858	786	415	369	684	605	820	723
170 000	910	832	440	385	724	641	868	765
180 000	961	884	463	411	765	676	920	814
190 000	1013	938	485	435	806	712	967	856
200 000	1076	1005	509	452	846	752	1015	897
210 000	1116	1043	533	474	886	782	1063	946
220 000	1156	1085	559	493	927	821	1111	985
230 000	1197	1120	582	512	967	853	1159	1026
240 000	1237	1163	605	533	1008	891	1209	1072
250 000	1278	1203	628	552	1049	928	1257	1113
260 000	1319	1246	651	574	1088	965	1306	1156
270 000	1360	1285	676	598	1129	997	1354	1196
280 000	1401	1323	698	614	1168	1033	1403	1246
290 000	1442	1365	723	642	1209	1071	1452	1286
Each Additional $5000	20	20	12	12	18	18	21	21

1997 AUTOPAC Vehicle Description Table (PASSENGER VEHICLES)

MAKE & MODEL	CYL	FUEL	WHL DR	MODEL YEAR																				
				97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	77	76	75	74 & prior
FORD AEROSTAR																								
- Passenger Van	4	Gas	2WD										13	13	12									
- Passenger Van	6	Gas	2WD	21	20	20	17	16	15	15	15	13	13	13	12									
- Passenger Van	6	Gas	4WD	21	20	18	18	16	16	16	16													
FORD CROWN VICTORIA																								
- 4 Door	8	Gas	2WD	21	19	18	17	15	12															
FORD E250 VAN																								
- Van	6	Gas	2WD		17	17	15	15	15	15	14	14	14	12	12	12	11	10	9	8	5	5	1	
- Van	6	Propane	2WD			17	15	15	15	15	14	14	14	12	12	12								
- Van	8	Gas	2WD		17	17	15	15	15	15	14	14	14	12	12	12	11	10	9	8	5	5	1	
- Van	8	Propane	2WD			17	15	15	15	15	14	14	14	12	12	12								
FORD ESCORT L																								
- 2 Door	4	Gas	2WD								11	11	11		10	10	9	9	8	8	7	7	7	0
- 2 Door	4	Diesel	2WD												10	10	9	9						
- 4 Door	4	Gas	2WD												10	10	9	9	8	8	7			
- 4 Door	4	Diesel	2WD												10	10	9	9						
FORD ESCORT LX																								
- 2 Door	4	Gas	2WD		16	16	14	14	13	13	13	11	11		10									
- 4 Door	4	Gas	2WD	16	15	15	14	13	13	13	12	11	10		10	10	10							
- Station Wagon	4	Gas	2WD	15	15	15	13	13	13	12	12	11	10		10	10	10							
FORD TEMPO GL																								
- 2 Door	4	Gas	2WD				13	13	13	13	12	12	12	10	10	10	9							
- 4 Door	4	Gas	2WD				13	13	13	13	12	12	12	10	10	10	8							
- 2 Door	6	Gas	2WD				13	13	13															
- 4 Door	6	Gas	2WD				13	13	13															

1997 AUTOPAC Vehicle Description Table (PASSENGER VEHICLES)

MAKE & MODEL	CYL	FUEL	WHL DR	MODEL YEAR																				
				97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	77	76	75	74 & prior
FORD TEMPO ALL WHEEL																								
- 2 Door	4	Gas	4WD										12	12										
- 4 Door	4	Gas	4WD							14	14	12	12	12										
FORD TEMPO LX																								
- 2 Door	4	Gas	2WD											12	12									
- 4 Door	4	Gas	2WD				15	13	13	13	12	12	12	12	12									
- 4 Door	6	Gas	2WD				15	13	13															
FORD THUNDERBIRD																								
- 2 Door	4	Gas	2WD												12			12						
- 2 Door	6	Gas	2WD						15	15	15	15	15	14	12	12	12	12	10	9				
- 2 Door	8	Gas	2WD						15	15			15	14	12	12	12	12	10	9	7	7	7	1
- 4 Door	8	Gas	2WD																					1
- Convertible	8	Gas	2WD																					1
FORD THUNDERBIRD 55 - 57																								
- 2 Door	8	Gas	2WD																					2
- Convertible	8	Gas	2WD																					2
FORD THUNDERBIRD LX																								
- 2 Door	6	Gas	2WD	21	20	19	16	16	15	15	15	15	15	14										
- 2 Door	8	Gas	2WD	21	20	19	16	16	15	15			15	14										
FORD THUNDERBIRD SPORT																								
- 2 Door	8	Gas	2WD						15				15	14										

1997 AUTOPAC Premiums (Passenger Vehicles) TERRITORY 1

			RATING GROUPS																
	DISCOUNT	DED AMT	0	1	2	[redacted]	10	11	12	13	14	15	16	17	18	19	20	21
ALL PURPOSE	NON MERIT	500	388	445	498		745	775	859	895	901	977	1055	1102	1150	1205	1260	1348
	0	200	40	46	50		87	87	87	87	89	89	89	89	89	89	89	96
		100	68	74	85		150	150	150	150	155	155	155	155	155	155	155	166
	1 MERIT	500	369	423	473		708	736	816	850	856	928	1002	1047	1092	1145	1197	1281
	5%	200	36	44	47		83	83	83	83	85	85	85	85	85	85	85	91
		100	65	70	81		142	142	142	142	147	147	147	147	147	147	147	158
	2 MERIT	500	349	400	448		670	697	773	805	811	879	949	992	1035	1084	1134	1213
	10%	200	36	41	45		78	78	78	78	80	80	80	80	80	80	80	86
		100	41	67	76		135	135	135	135	139	139	139	139	139	139	139	149
	3 MERIT	500	330	378	423		633	659	730	761	766	830	897	937	977	1024	1071	1146
	15%	200	34	39	42		74	74	74	74	76	76	76	76	76	76	76	82
		100	58	63	72		127	127	127	127	132	132	132	132	132	132	132	141
	4 MERIT	500	310	356	398		596	620	687	716	721	782	844	882	920	964	1008	1078
	20%	200	32	37	40		70	70	70	70	71	71	71	71	71	71	71	77
		100	54	59	68		120	120	120	120	124	124	124	124	124	124	124	133
	5 MERIT	500	291	334	373		559	581	644	671	676	733	791	826	862	904	945	1011
	25%	200	30	34	37		65	65	65	65	67	67	67	67	67	67	67	72
		100	51	55	64		112	112	112	112	116	116	116	116	116	116	116	124
PLEASURE	0	500	384	438	478		690	717	759	791	827	873	919	965	1012	1053	1098	1174
	NON MERIT	200	40	46	50		87	87	87	87	89	89	89	89	89	89	89	96
		100	68	74	85		150	150	150	150	155	155	155	155	155	155	155	166
	1 MERIT	500	365	416	454		655	681	721	751	786	829	873	917	961	1000	1043	1115
	5%	200	38	44	47		83	83	83	83	85	85	85	85	85	85	85	91
		100	65	70	81		142	142	142	142	147	147	147	147	147	147	147	158
	2 MERIT	500	346	394	430		621	645	683	712	744	786	827	868	911	948	988	1057
	10%	200	36	41	45		78	78	78	78	80	80	80	80	80	80	80	86
		100	61	67	76		135	135	135	135	139	139	139	139	139	139	139	149
	3 MERIT	500	326	372	406		586	609	645	672	703	742	781	820	860	895	933	998
	15%	200	34	39	42		74	74	74	74	76	76	76	76	76	76	76	82
		100	58	63	72		127	127	127	127	132	132	132	132	132	132	132	141
	4 MERIT	500	307	350	382		552	574	607	633	662	698	735	772	810	842	878	939
	20%	200	32	37	40		70	70	70	70	71	71	71	71	71	71	71	77
		100	54	59	68		120	120	120	120	124	124	124	124	124	124	124	133
	5 MERIT	500	288	328	358		517	538	569	593	620	655	689	724	759	790	823	880
	25%	200	30	34	37		65	65	65	65	67	67	67	67	67	67	67	72
		100	51	55	64		112	112	112	112	116	116	116	116	116	116	116	124

TPL				
MERITS	500 000	1 000 000	2 000 000	5 000 000
0	20	27	33	53
1	19	26	31	50
2	18	24	30	48
3	17	23	28	45
4	16	22	26	42
5	15	20	25	40

♦ Maximum insured value is 40 000 with an additional premium of 8 per thousand.

1997 AUTOPAC Premiums (Passenger Vehicles) TERRITORY 2

	DISCOUNT	DED AMT	RATING GROUPS 0	1	2	10	11	12	13	14	15	16	17	18	19	20	21
ALL PURPOSE	0 NON MERIT	500	270	329	364	569	590	625	649	678	716	753	791	828	864	901	964
		200	40	46	50	87	87	87	87	89	89	89	89	89	89	89	96
		100	68	74	85	150	150	150	150	155	155	155	155	155	155	155	166
	1 MERIT 5%	500	256	313	346	541	560	594	617	644	680	715	751	787	821	956	976
		200	38	44	47	83	83	83	83	85	85	85	85	85	85	85	91
		100	65	70	81	142	142	142	142	147	147	147	147	147	147	147	158
	2 MERIT 10%	500	243	296	328	512	531	562	584	610	644	678	712	745	778	811	868
		200	36	41	45	78	78	78	78	80	80	80	80	80	80	80	86
		100	61	67	76	135	135	135	135	139	139	139	139	139	139	139	149
	3 MERIT 15%	500	229	280	309	484	501	531	552	576	609	640	672	704	734	766	819
		200	34	39	42	74	74	74	74	76	76	76	76	76	76	76	82
		100	58	63	72	127	127	127	127	132	132	132	132	132	132	132	141
	4 MERIT 20%	500	216	263	291	455	472	500	519	542	573	602	633	662	691	721	771
		200	32	37	40	70	70	70	70	71	71	71	71	71	71	71	77
		100	54	59	68	120	120	120	120	124	124	124	124	124	124	124	133
	5 MERIT 25%	500	202	247	273	427	442	469	487	508	537	565	593	621	648	676	723
		200	30	34	37	65	65	65	65	67	67	67	67	67	67	67	72
		100	51	55	64	112	112	112	112	116	116	116	116	116	116	116	124
PLEASURE	0 NON MERIT	500	243	306	333	499	517	541	561	596	621	649	683	718	748	778	833
		200	40	46	50	87	87	87	87	89	89	89	89	89	89	89	96
		100	68	74	85	150	150	150	150	155	155	155	155	155	155	155	166
	1 MERIT 5%	500	231	291	316	474	491	514	533	566	590	617	649	682	711	739	791
		200	38	44	47	83	83	83	83	85	85	85	85	85	85	85	91
		100	65	70	81	142	142	142	142	147	147	147	147	147	147	147	158
	2 MERIT 10%	500	219	275	300	449	465	487	505	536	559	584	615	646	673	700	750
		200	36	41	45	78	78	78	78	80	80	80	80	80	80	80	86
		100	61	67	76	135	135	135	135	139	139	139	139	139	139	139	149
	3 MERIT 15%	500	207	260	283	424	439	460	477	507	528	552	581	610	636	661	708
		200	34	39	42	74	74	74	74	76	76	76	76	76	76	76	82
		100	58	63	72	127	127	127	127	132	132	132	132	132	132	132	141
	4 MERIT 20%	500	194	245	266	399	414	433	449	477	497	519	546	574	598	622	666
		200	32	37	40	70	70	70	70	71	71	71	71	71	71	71	77
		100	54	59	68	120	120	120	120	124	124	124	124	124	124	124	133
	5 MERIT 25%	500	182	229	250	374	388	406	421	447	466	487	512	538	561	583	625
		200	30	34	37	65	65	65	65	67	67	67	67	67	67	67	72
		100	51	55	64	112	112	112	112	116	116	116	116	116	116	116	124

TPL				
MERITS	500 000	1 000 000	2 000 000	5 000 000
0	20	27	33	53
1	19	26	31	50
2	18	24	30	48
3	17	23	28	45
4	16	22	26	42
5	15	20	25	40

♦ Maximum insured value is 40 000 with an additional premium of 8 per thousand.

MONTHLY PAYMENT REQUIRED TO AMORTIZE A $1000.00 MORTGAGE

n	5%	5¼%	5½%	5¾%	6%	6¼%	6½%	6¾%	7%	7¼%	7½%	7¾%	8%	8¼%	8½%	8¾%	9%	n
1	85.61	85.72	85.84	85.95	86.07	86.18	86.30	86.41	86.53	86.64	86.76	86.87	86.99	87.10	87.22	87.34	87.45	1
2	43.87	43.98	44.10	44.21	44.32	44.43	44.55	44.66	44.77	44.89	45.00	45.11	45.23	45.34	45.46	45.57	45.68	2
3	29.97	30.08	30.20	30.31	30.42	30.54	30.65	30.76	30.88	30.99	31.11	31.22	31.34	31.45	31.57	31.68	31.80	3
4	23.04	23.14	23.26	23.37	23.49	23.60	23.71	23.83	23.95	24.06	24.18	24.30	24.41	24.53	24.65	24.77	24.89	4
5	18.87	18.99	19.10	19.22	19.33	19.45	19.57	19.68	19.80	19.92	20.04	20.16	20.28	20.40	20.52	20.64	20.76	5
6	16.10	16.22	16.34	16.46	16.57	16.69	16.81	16.93	17.05	17.17	17.29	17.41	17.53	17.66	17.78	17.90	18.03	6
7	14.13	14.25	14.37	14.49	14.61	14.73	14.85	14.97	15.09	15.22	15.34	15.46	15.59	15.71	15.84	15.96	16.09	7
8	12.66	12.78	12.90	13.02	13.14	13.26	13.39	13.51	13.63	13.76	13.88	14.01	14.14	14.26	14.39	14.52	14.65	8
9	11.52	11.64	11.76	11.88	12.01	12.13	12.25	12.38	12.51	12.63	12.76	12.89	13.02	13.15	13.28	13.41	13.54	9
10	10.61	10.73	10.85	10.98	11.10	11.23	11.35	11.48	11.61	11.74	11.87	12.00	12.13	12.27	12.40	12.53	12.67	10
11	9.86	9.99	10.11	10.24	10.37	10.49	10.62	10.75	10.88	11.02	11.15	11.28	11.42	11.55	11.69	11.82	11.96	11
12	9.25	9.37	9.50	9.63	9.76	9.89	10.02	10.15	10.28	10.42	10.55	10.69	10.82	10.96	11.10	11.24	11.38	12
13	8.73	8.86	8.99	9.12	9.25	9.38	9.51	9.65	9.78	9.92	10.05	10.19	10.33	10.47	10.61	10.75	10.90	13
14	8.29	8.42	8.55	8.68	8.81	8.95	9.08	9.22	9.35	9.49	9.63	9.77	9.91	10.06	10.20	10.34	10.49	14
15	7.91	8.04	8.17	8.30	8.44	8.57	8.71	8.85	8.99	9.13	9.27	9.41	9.56	9.70	9.85	9.99	10.14	15
16	7.58	7.71	7.84	7.98	8.11	8.25	8.39	8.53	8.67	8.81	8.96	9.10	9.25	9.40	9.54	9.69	9.85	16
17	7.29	7.42	7.56	7.69	7.83	7.97	8.11	8.25	8.40	8.54	8.69	8.83	8.98	9.13	9.28	9.43	9.59	17
18	7.03	7.17	7.30	7.44	7.58	7.72	7.87	8.01	8.16	8.30	8.45	8.60	8.75	8.90	9.05	9.21	9.36	18
19	6.80	6.94	7.08	7.22	7.36	7.50	7.65	7.79	7.94	8.09	8.24	8.39	8.55	8.70	8.85	9.01	9.17	19
20	6.60	6.74	6.88	7.02	7.16	7.31	7.46	7.60	7.75	7.90	8.06	8.21	8.36	8.52	8.68	8.84	9.00	20
25	5.85	5.99	6.14	6.29	6.44	6.60	6.75	6.91	7.07	7.23	7.39	7.55	7.72	7.88	8.05	8.22	8.39	25
n	5%	5¼%	5½%	5¾%	6%	6¼%	6½%	6¾%	7%	7¼%	7½%	7¾%	8%	8¼%	8½%	8¾%	9%	n

MATHEMATICS 40G

Answer Key and Common Errors

PROVINCIAL EXAMINATION

January 18, 2000

Manitoba
Education
and Training

MARKING SUMMARY

MATHEMATICS 40G January 18, 2000

Part A: 30 multiple-choice questions worth 1.5 marks each worth a total of 45 marks

1.	B	11.	B	21.	B
2.	D	12.	B	22.	C
3.	A	13.	D	23.	C
4.	D	14.	D	24.	C
5.	C	15.	B	25.	D
6.	D	16.	C	26.	D
7.	A	17.	A	27.	B
8.	D	18.	C	28.	B
9.	A	19.	B	29.	A
10.	A	20.	B	30.	C

Part B: 11 short-answer questions worth a total of 20 marks

1.	1 mark	$y = 5$	6.	2 marks	**34 mills**	10.	2 marks	$\angle P = 56.3°$
2.	1 mark	$6x^2 - 3x + 1$	7.	1 mark	**$68 800.00**	11a.	1 mark	**30**
3.	2 marks	$2x^2 - 9x + 22$			**$15 200.00**			**195**
4.	2 marks	**$85 411.20**	8.	2 marks	**$82 015.20**	11b.	1 mark	**47.5**
5.	2 marks	**$392.00**	9.	2 marks	$c = 12$	11c.	1 mark	**47.5 - 54.5**

Part C: 13 long-answer questions worth a total of 35 marks

1.	3 marks	4.	4 marks	7.	3 marks	10.	3 marks	13.	3 marks
2.	2 marks	5.	3 marks	8.	2 marks	11.	2 marks		
3.	3 marks	6.	2 marks	9.	3 marks	12.	2 marks		

PART B

DO NOT USE

Value: 20 marks **Suggested time: 40 minutes**

1. If $x = 3$, determine the value of y in the equation $4x + 3y = 27$.

1 mark

$4(3) + 3y = 27$ ½ Mark
$12 + 3y = 27$
$3y = 15$
$y = 5$ ½ Mark

ANSWER FOR # 1 101

$y = 5$

2. Simplify: $\dfrac{12x^3 - 6x^2 + 2x}{2x}$

- 2 terms correct ½ Mark

1 mark

ANSWER FOR # 2 102

$6x^2 - 3x + 1$

3. Simplify: $2x(x+3) - 3(5x-4) + 10$

2 marks

$2x^2 + 6x - 15x + 12 + 10$ 1½ Marks
If terms collected correctly ½ Mark

ANSWER FOR # 3 103

$2x^2 - 9x + 22$

4. A family takes out a mortgage of $62 000.00 at 6¾% amortized over 10 years with equal monthly payments. What will be the total amount paid over the life of the mortgage?

DO NOT USE

2 marks

½ Mark	½ Mark	½ Mark	½ Mark

$$\frac{62\,000}{1000} \times 11.48 \times 12 \times 10 = \$85\,411.20$$

ANSWER FOR # 4 104

$85 411.20

5. Two homes have the following features in common for insurance purposes:
   - both are insured for $150 000.00,
   - both owners qualify for "STANDARD RATES", and
   - both owners want a $500.00 deductible.

One home is in Metro Winnipeg, and the other is in rural Manitoba (Table 1).
How much more does it cost to insure the Winnipeg home?

2 marks

Using correct number from table	**1 Mark**
Next table value	**½ Mark**
Difference	**½ Mark**

Wpg (Metro)	735.00
Table 1	343.00
Difference	392.00

ANSWER FOR # 5 105

$392.00

6. A town has a total assessed value of $33 500 000.00. If $1 139 000.00 must be raised from property taxes, what mill rate must be set?

DO NOT USE

2 marks

$1\,139\,000 = 33\,500\,000 \times \text{rate}$

$\text{rate} = \dfrac{1\,139\,000}{33\,500\,000}$ **1 Mark**

$\text{rate} = 0.034$ **½ Mark**

$\text{mill rate} = 34 \text{ mills}$ **½ Mark**

ANSWER FOR # 6 106

34 mills

7. A home was purchased for $84 000.00 with a down payment of $15 000.00. Complete the table.

1 mark

107

Date	Regular Payment			Unpaid Balance	Owner's Equity
	Principal	Interest	Total		
Start				$69 000.00	$15 000.00
End of first month	$200.00	$488.75	$688.75	**$68 800.00**	**$15 200.00**
				½ Mark	**½ Mark**

8. A factory has an assessed value of $2 196 000.00 and the local mill rate is 34.7 mills. If there is an additional charge of $5814.00 for local improvements, how much is the property tax bill?

2 marks

$2\,196\,000 \times 0.0347 = 76\,201.20$
½ Mark **½ Mark** **½ Mark**

$76\,201.20 + 5814 = 82\,015.20$ **½ Mark**

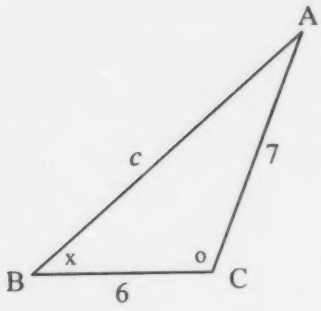
ANSWER FOR # 8 108

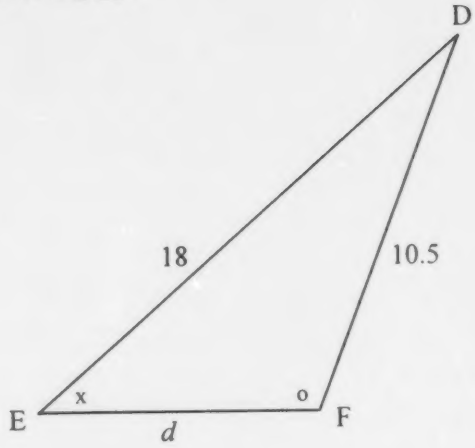
$82 015.20

DO NOT USE

9. In the diagram below, $\triangle ABC$ is similar to $\triangle DEF$. Determine the length of AB.

2 marks



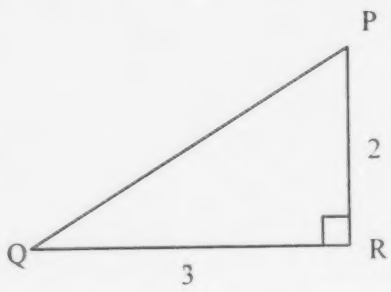


$\frac{7}{10.5} = \frac{c}{18}$	**1 Mark**
$c = \frac{7(18)}{10.5}$	**½ Mark**
$c = 12$	**½ Mark**

ANSWER FOR # 9 109

$c = 12$

10. In $\triangle PQR$, $\angle R = 90°$, $q = 2$ and $p = 3$. Determine the measure of $\angle P$ to **one decimal place**.



$\tan P = \frac{3}{2}$	**1 Mark**
$\angle P = 56.3099...$	**½ Mark**
$\angle P = 56.3°$	**½ Mark**

2 marks

ANSWER FOR # 10 110

$\angle P = 56.3°$

DO NOT USE

11. a) Complete the table below.

1 mark

111

Class Boundaries	Class Mark x	Frequency f	Cumulative Frequency	$f \cdot x$
26.5 - 33.5	**30** ½ Mark	5	5	150
33.5 - 40.5	37	7	12	259
40.5 - 47.5	44	7	19	308
47.5 - 54.5	51	8	27	408
54.5 - 61.5	58	10	37	580
61.5 - 68.5	65	3	40	**195** ½ Mark
	Total	40		1900

b) Calculate the mean for the grouped data to **one decimal place**.

1 mark

$\frac{1900}{40}$ ½ Mark

$= 47.5$ ½ Mark

112

ANSWER FOR # 11 b)

47.5

c) What are the boundaries of the class containing the median?

1 mark

$\frac{41}{2} = 20.5^{th}$ element ½ Mark

113

ANSWER FOR # 11 c)

47.5 - 54.5

PART C

DO NOT USE

Value: 35 marks **Suggested time: 70 minutes**

1. Solve: $\frac{1+8x}{2} + 4 = 3(x-4)$

3 marks

$2\left[\frac{1+8x}{2}+4\right] = [3(x-4)]2$ } **2 Marks**

$1+8x+8 = 6x-24$

$8x-6x = -24-8-1$ } **½ Mark**

$2x = -33$

$x = -\frac{33}{2}$ **½ Mark**

ANSWER FOR # 1 114

$x = -\frac{33}{2}$

Answer Only = **1 Mark**

2. P varies directly with T. If $P = 30$ when $T = 25$, what is the value of P when $T = 150$?

2 marks

$P \propto T$

$P = kT$

$30 = k(25)$ } **½ Mark**

$\frac{30}{25} = k$

$k = 1.2$ **½ Mark**

$P = 1.2T$ **½ Mark**

$P = 1.2(150)$

$P = 180$ **½ Mark**

or

$\frac{P_1}{P_2} = \frac{T_1}{T_2}$ **½ Mark**

$\frac{30}{P_2} = \frac{25}{150}$ **½ Mark**

$\frac{4500}{25} = P_2$ **½ Mark**

$P_2 = 180$ **½ Mark**

ANSWER FOR # 2 115

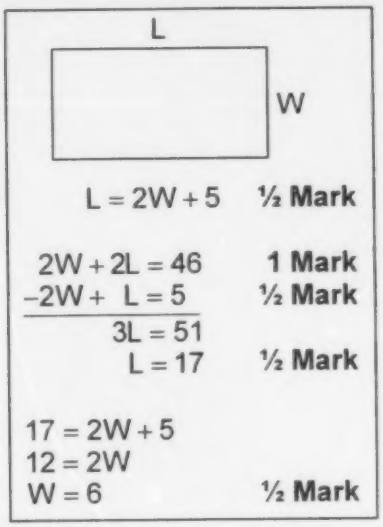
$P = 180$

Answer Only = **1 Mark**

DO NOT USE

3. The perimeter of a rectangle is 46. The length is 5 more than twice the width. What are the dimensions of the rectangle? (Only algebraic solutions will be awarded full marks.)

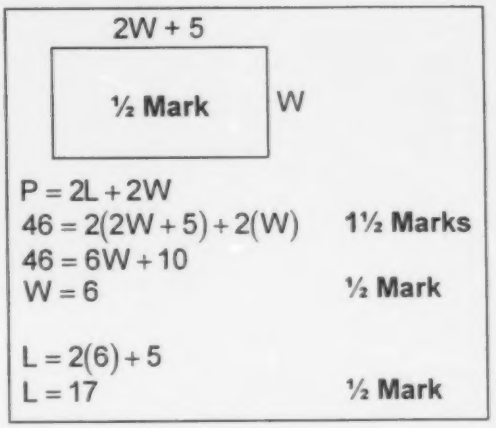
3 marks



$L = 2W + 5$ ½ Mark

$2W + 2L = 46$ 1 Mark
$-2W + L = 5$ ½ Mark
$3L = 51$
$L = 17$ ½ Mark

$17 = 2W + 5$
$12 = 2W$
$W = 6$ ½ Mark



$P = 2L + 2W$
$46 = 2(2W + 5) + 2(W)$ 1½ Marks
$46 = 6W + 10$
$W = 6$ ½ Mark

$L = 2(6) + 5$
$L = 17$ ½ Mark

ANSWER FOR # 3 116

W = 6, L = 17
Answer Only = **1 Mark**

4. The cost of placing an advertisement in a newspaper is the sum of two quantities; the first is fixed, and the other varies directly with the number of words in the advertisement. It costs \$7.00 to place a 20-word advertisement, and \$9.50 to place a 30-word advertisement. Calculate the cost to place a 45-word advertisement.

4 marks

$C = F + kn$
$9.50 = F + 30k$ ½ Mark
$7.00 = F + 20k$ ½ Mark
$2.50 = 10k$ ½ Mark
$k = 0.25$ ½ Mark

or

$C = F + kn$
$9.50 - 7.00 = 2.50$ ½ Mark
$30 - 20 = 10$ ½ Mark
$k = 0.25$ 1 Mark

$7.00 = F + 20(0.25)$ ½ Mark
$7.00 = F + 5$
$F = 2.00$ ½ Mark
$C = 2.00 + 0.25(45)$ ½ Mark
$C = 2.00 + 11.25$
$C = \$13.25$ ½ Mark

ANSWER FOR # 4 117

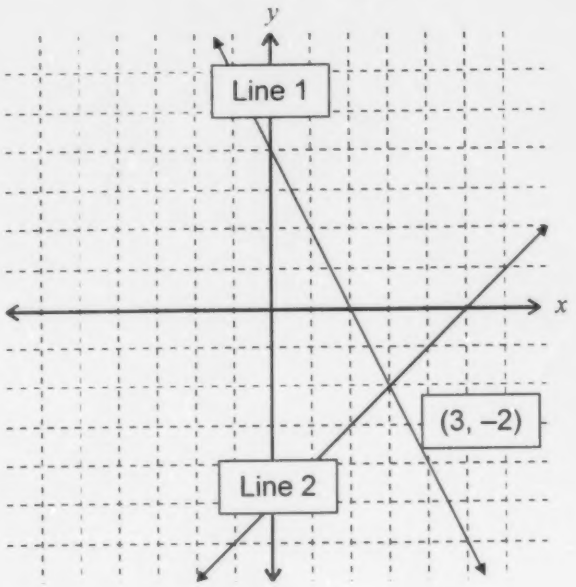
Cost = \$13.25
Answer Only = **1 Mark**

DO NOT USE

5. Determine the solution to the following system of equations by **graphing**.

$2x + y = 4$

$y = x - 5$



Line 1
y = –2x + 4 **½ Mark**
m = –2 **½ Mark**
b = 4 **½ Mark**

Line 2 **1 Mark**

Point of intersection **½ Mark**

3 marks

118

ANSWER FOR # 5

(3, –2)
Answer Only = **1 Mark**

6. A building was valued at $115 000.00 and insured for $85 000.00 with an 80% co-insurance clause. If a fire caused $75 000.00 worth of damage, how much will the insurance company pay?

$115\,000 \times 0.8 = 92\,000$ **½ Mark**

$\text{Amount paid} = \frac{85\,000}{92\,000} \times 75\,000$ **1 Mark**

$= 69\,293.48$ **½ Mark**

2 marks

119

ANSWER FOR # 6

$69 293.48
Answer Only = **1 Mark**

7. The Manitoba Tax Credit form below is part of a return for a young couple with **two dependent children**. No one in the family qualifies for a disability claim.

Complete the Manitoba Tax Credit Program for lines **3** and **13 to 16**.

DO NOT USE

120

3 marks

Manitoba

Manitoba Tax Credit Programs — T1C (MAN.) - 1998

Net family income for the cost-of-living and property tax credits

Enter your net income from line 236 of your return.			24 951.43	1
Enter your spouse's net income from line 236 of your spouse's return.	6030	+	31 475.28	2
Add line 1 and line 2. **Net family income for the cost-of-living and property tax c**	½ Mark		56 426.71	3

Cost-of-living tax credit

Basic credit					190.00	4
Age credit for self (if born 1933 or earlier)	claim $110				+ 0.00	5
Basic credit for spouse	claim $190		190.00	6		
Age credit for spouse (if born 1933 or earlier)	claim $110		+	7		
Disability credit for spouse	claim $110		+	8		
Add lines 6 to 8.		6090	= 190.00	➤	+ 190.00	9
Equivalent-to-spouse credit			claim $190		+ 0.00	10
Disability credit for self or for a dependant other than your spouse	Number of disability claims	6095	0	× $110 =	+ 0.00	11
Credit for disabled dependants	Number of disabled dependants	6097	0	× $60 =	+ 0.00	12
Credit for dependent children born 1980 or later	Number of children	6099	2	× $25	½ Mark	50.00 13
Add the amounts on lines 4, 5, and 9 to 13.				Total credit	½ Mark	430.00 14
Amount on line 3	56 426.71	½ Mark			½ Mark	564.27 15
Line 14 minus line 15 (if negative enter "0")				Cost-of-living tax cred	½ Mark	0.00 16

DO NOT USE

8. Calculate the annual premium for a "CONDOMINIUM CONTENTS INSURANCE" policy for a condominium located in Metro Winnipeg with an insured value of $126 000.00 and $500.00 deductible.

From table 607	½ Mark
Plus 6 × 5 = 30	1 Mark
Total 637	½ Mark

2 marks

ANSWER FOR # 8 121

$637.00
Answer Only = **1 Mark**

9. A home was purchased for $97 000.00 with a $16 000.00 down payment and the balance was financed with a mortgage at 8¼% amortized over 20 years with equal monthly payments. Complete the table.

Date	Regular Payment			Unpaid Balance	Owner's Equity
	Principal	Interest	Total		
Start				$81 000.00	$16 000.00
End of first month	**$133.24** **½ Mark**	**$556.88**	**$690.12**		

½ Mark for putting the numbers into the correct place in the table

3 marks

Show the calculation of the interest here.

$$81\,000 \times 0.0825 \times \frac{1}{12} = 556.88$$

1 Mark

Show the calculation of the monthly payment here. 122

8.52 × 81 = 690.12
½ Mark **½ Mark**

DO NOT USE

10. A couple earns the following salaries:

Spouse #1		Spouse #2	
Gross Annual Salary	$48 900.00	Gross Weekly Salary	$807.10
Total Annual Deductions	$19 560.00	Net Weekly Salary	$565.40

Use the excerpt from the budget form below to calculate the **average net monthly** income for the family. (Assume a 52 work-week year.)

Regular Net Annual Income	Spouse # 1	**$29 340.00** (48 900 – 19 560)	**1 Mark**
	Spouse # 2	**$29 400.80** (565.40 × 52)	**1 Mark**
	Total Net Annual Income	**$58 740.80**	**½ Mark**

123

3 marks

Average Net Monthly Income **$4895.07** **½ Mark**

11. A 21 year old individual purchases an $80 000.00 "ENDOWMENT TO AGE 65" life insurance policy. Calculate the quarterly premiums.

2 marks

$20.17 \times 80 \times 0.26 = 419.54$ **2 Marks**

2 out of 3 elements — 1 Mark

1 element correct — ½ Mark

124

ANSWER FOR # 11

$419.54
Answer Only = **1 Mark**

12. Calculate the mean deviation for the data below.
The mean of the data is 60.

61, 56, 61, 62, 62, 58

2 marks

$|60-61| = 1$
$|60-56| = 4$
$|60-61| = 1$
$|60-62| = 2$
$|60-62| = 2$
$|60-58| = 2$

1 Mark

$12 \div 6 = 2$ **½ Mark**

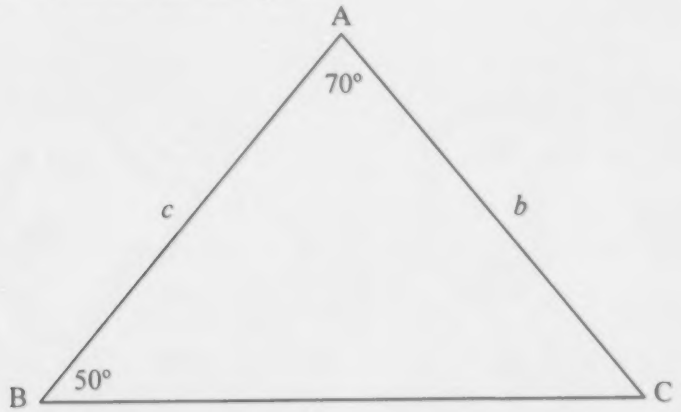
Total = 12 **½ Mark**

DO NOT USE

ANSWER FOR # 12 125

2
Answer Only = **1 Mark**

13. In $\triangle ABC$, $\angle A = 70°$, $\angle B = 50°$ and $a = 9$.
Determine the value of c to **one decimal place**.



9

3 marks

$\angle C = 180° - (70° + 50°)$
$\angle C = 60°$ **½ Mark**

$\frac{c}{\sin C} = \frac{a}{\sin A}$ **½ Mark**

$\frac{c}{\sin 60°} = \frac{9}{\sin 70°}$ **½ Mark**

$c = \frac{9 \sin 60°}{\sin 70°}$ **½ Mark**

$c = 8.29...$ **½ Mark**

$c = 8.3$ **½ Mark**

ANSWER FOR # 13 126

8.3
Answer Only = **1 Mark**

MATHEMATICS 40G

Common Errors Noted By Markers

January 18, 2000

Manitoba
Education
and Training

Mathematics 40G—January 18, 2000
Common Errors Noted By Markers

Part B

Question No.	Error Description
1	• Fail to change $4x$ to $-4x$ when moving across to right side of equation
2	• $\frac{2x}{2x} = x$ • $\frac{8x^6}{2x}$ • $6x^2 - 3x$ • Students leave out "+" sign between positive polynomial terms
3	• $2x(x + 3)$ Response $2x^2 + 6$ • $2x(x + 3)$ becomes $\underline{\underline{4x^2}} + 6x$ • Students leave out "+" sign between positive polynomial terms
4	• 62 x 11.48 x 10 = $7117.60 • 62 x 11.48 x 12 = $8541.12 • 62 x 11.48 = $711.76 • 62 x 11.35 x 10 x 12 = $84 444.00
5	• select $500 ded. 642 − 301 = $341 ; select $200 ded. 717 − 341 = $376 • 735 x 150 000 = $110 250 000 343 x 150 000 = $51 450 000 Difference = $58 800 000
6	• Assessed value / Property taxes • Divided incorrectly (Assessed value / Tax required instead of Tax required / Assessed value) • Did not express answer as a mill rate (gave 0.034 not 34 mills)

Part B (continued)

Question No.	Error Description
7	• Subtracting and adding "Total" instead of Principal • Subtracting and adding "Interest" instead of Principal • Increased equity and/or reduced balance by total payment or interest instead of Principal
8	• Mill rate is not divided by 1000 before multiplying • Forgetting to add local improvements • Added local improvements to assessed value before multiplying by mill rate • Divided by mill rate instead of multiplying
9	• ratios reversed • using Pythagorean theorem, law of sines, law of cosines solving for d
10	• hyp is 4 • tan P = 2/3
11b)	• $\frac{\text{add class marks}}{6}$ • $\frac{1900}{6}$ • 48
11c)	• 40.5 - 47.5 • 40.5 - 47.5 and 47.5 - 54.5 • 47.5 • 7

Part C

Question No.	Error Description
1	• Multiply by 2 on L.H.S. only • Dropped the negative sign • $\frac{1+8x}{2} = 2+4x$ • Added $\frac{1+8x}{2} = \frac{9x}{2}$ for the left hand side • Multiply through by another factor e.g. 12 — but do not multiply through accurately (i.e. double dist. error)
2	• Subtracting 25 from 30 to get 5 and then adding 5 to 150. • Using I = Prt because of recognition of variables P & T. • K = PT $\quad$ 750 = 150P = 30(25) $\quad$ 5 = P = 750
3	• Not multiplied by 2 for 2l + 2w • w + 5 • 2w – 5 as length • △ not □
4	• Direct proportion e.g. 25¢/word x 45 (forget fixed cost) • Use slope method/wrong slope
5	• Lines on graph not drawn accurately • No ruler used • Plotting two points close together, not being accurate in extending lines • (–2, 3) instead of (3, –2)
6	• 85 000 x 80% = 68 000 • $\frac{115\,000}{85\,000(.8)} \times 75\,000$ • Rounding off $\frac{115\,000}{85\,000(.8)}$

Part C (continued)

Question No.	Error Description
7	• Line 14 190 + 50 = 240 instead of 190 + 190 + 50 = 430 • Line 14 – 15 = –134.27 instead of 0
8	• Used wrong table tenants vs. condo owners • Used wrong deductible $200 vs. $500
9	• Multiplying by 20 years vs. 1/12 for the interest • 81 000 ÷ 20 ÷ 12 = $337.50 • Students placed calculations in incorrect boxes
10	• not rounded correctly • Using gross salary rather than net • Using daily, weekly or monthly instead of Annual • Using a 48 week year • Subtract for spouse 2 because they subtracted for spouse 1
11	• Dividing by 4 rather than multiplying by 0.26 • not dividing by 1000
12	• Forgetting to take absolute value • Calculating mean incorrectly when given e.g. $\frac{60}{6} = 10$ • 12/60 or 60/12 • Using correct formula but not understanding $\bar{x}$ • Did not divide the sum by "n"
13	• Solving for b instead of c • Improper rounding - too early in question and failing to round • not putting in the "sin" word in front of angles. • Trig solution with calculator in wrong mode

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Mathematics 40G
Provincial Examination

Checklist for Supervising Teachers

January 2000

Manitoba
Education
and Training

PREFACE

This *Checklist for Supervising Teachers* is one of a four-part series of documents:

- *Policies and Procedures for Provincial Examinations and Standards Tests*;
- *Information Bulletin*;
- *Administration Manual for Supervising Teachers*; and
- ***Checklist for Supervising Teachers***.

These documents prepare teachers and administrators for the Mathematics 40G Provincial Examination. Please use this document in conjunction with the registration package and other documents in the series to gain a full understanding of the protocols and procedures associated with the testing program at Manitoba Education and Training.

This *Checklist* and the *Administration Manual for Supervising Teachers* must be read prior to administering the examination. It contains specific step-by-step information regarding activities and administration procedures associated with the Mathematics 40G Provincial Examination. For policies regarding absenteeism, lateness, violation of rules, etc., please refer to the *Administration Manual for Supervising Teachers*.

Review the *Checklist for Supervising Teachers* at least one day prior to the examination session.

This information has been provided in advance to allow you to become familiar with the examination process and to leave adequate time for questions.

If you have further inquiries, contact Daniel Limoges, Administrative Officer, at 945-6156, or toll free 1-800-282-8069 ext. 6156.

Advance Preparations

_____ 1. Read this document and the *Administration Manual for Supervising Teachers*. If you have any questions or require clarification, please contact Daniel Limoges, Administrative Officer, at 945-6156, or toll free 1-800-282-8069, ext. 6156.

_____ 2. Check with your principal to ensure that appropriate scheduling and space allocation for the examination has occurred. The classroom or area for the examination should be located where the least disruption will occur.

_____ 3. Confirm that the principal has taken inventory of the required types and quantities of examination materials itemized on the ***Packing List(s)***. It is imperative that this verification is done prior to the date of the examination. Any missing materials must be added **immediately.** Contact Daniel Limoges, at 945-6156, or toll free 1-800-282-8069 ext. 6156 to obtain missing materials.

_____ 4. Ensure that all subject-related materials have been removed from the walls and boards, and limit access to the room prior to the examination period.

_____ 5. Notify students in advance of:

- time, location and duration of the examination session (January 18, 2000),
- materials needed to write the examination (HB lead pencil, eraser, ruler, non-programmable and non-graphing scientific calculator),
- start and stop directions, and
- the requirement to remain in the examination session for at least 60 minutes.

_____ 6. Ensure that you have a supply of extra HB pencils, erasers, rulers and authorized calculators and that there is a functioning pencil sharpener and stapler in the room. Remember that students must not exchange materials during the examination.

_____ 7. If there is more than one supervising teacher, photocopy the *Supervising Teacher Report* and *Supervising Teacher Feedback Form* for each supervising teacher.

_____ 8. Ensure that you have the *Attendance Form(s)*, *Demographic Form(s)*, *Student Registration Form B*, and the *Supervising Teacher Report*. You will require the school code (four digits) which appears on the label on the *Supervising Teacher Report*.

_____ 9. Review the sample forms in the Appendices.

_____ 10. Ensure that the principal has arranged for a replacement supervisor to accompany students who must temporarily leave the room during the examination.

_____ 11. Ensure that the principal has made all the arrangements needed to meet the requirements of approved adaptations.

_____ 12. Ensure that Manitoba Education and Training (MET) numbers have been received for each student.

Examination Session
Tuesday, January 18, 2000

Date	Preparation Time	Maximum time allowed
Tuesday January 18, 2000	15 minutes preparation and instructions	3 hours

The examination must be written between **8:30 a.m. and 12:30 p.m. Tuesday, January 18, 2000**. Students are expected to remain in the room for a minimum of 60 minutes from the start of the examination.

Prior to Examination Session

_____ 1. Ensure your materials for the examination are available:

- *Packing List*;
- Mathematics 40G Provincial Examination booklets with the enclosed *Attendance Form(s)* (1 form per 10 students);
- extra copies of examination booklets (four extras + teacher copy) with enclosed *Attendance Form(s)*;
- *Formulas and Tables* Booklets;
- *Student Registration Form B* and where applicable an attached list of *Reported Student Exemptions*;
- *Demographic Forms* in the envelope provided—Multiple Choice Answer Sheet on reverse side (green in color);
- *Supervising Teacher Report—Mathematics 40G* (green);
- *Supervising Teacher Feedback Form—Mathematics 40G* (green);
- *Administration Manual for Supervising Teachers*;
- *Checklist for Supervising Teachers* (this document); and
- Set of shipping labels.

_____ 2. Count the number of Mathematics 40G Provincial Examination booklets. In the appropriate box on the *Supervising Teacher Report*, record the number of examination booklets received. The number of booklets should equal the number requested by the school plus an additional 4 booklets. This number should also be identical to the number on the *Packing List(s)*.

If you need to split a bundle of booklets between classrooms, make a photocopy of the *Attendance Form* enclosed with the bundle. **On your copy**, cross out the examination booklet numbers that are not used in your classroom.

_____ 3. Arrange the desks so they are spaced as far apart as possible.

_____ 4. Ensure that students exempted from writing the examination have left the room before you begin.

Beginning the Examination Session

_____ 1. Distribute ***Demographic Forms***, Mathematics 40G Provincial Examination.

Read instructions for completing ***Demographic Forms*** on the inside front cover of the examination booklet (*General Directions*).

- Supervise the completion of the *Demographic Forms*.

_____ 2. To every student, distribute:

- *Mathematics 40G Provincial Examination* Booklet.
- *Formulas and Tables* Booklet.

_____ 3. Read **aloud** the *Examination Rules* to students *(Appendix 1, p. 10)*.

_____ 4a. **For multiple-choice questions (Part A)**
Indicate to students the correct method of shading in circles for multiple-choice questions by reading aloud the directions on the *Demographic Form*.
Remind students to:

- pace themselves in writing the examination,
- use the *Answer Sheet* for responding to multiple-choice questions, and
- check over their work to ensure that all questions have been attempted.

_____ 4b. **For short-answer and long-answer questions (Part B and Part C)**
Remind students to:

- pace themselves in writing the examination,
- show their work in the spaces provided in the examination booklet, and
- check over their work to ensure that all questions have been attempted.

_____ 5. Remind students that while they are working, you will be circulating the *Attendance Form(s)* so they can print their names beside their examination booklet number.

_____ 6. **Instruct students to turn the page and begin. Record the start time on the *Supervising Teacher Report.***

During the Examination Session

_____ 1. Supervise the completion of the *Attendance Form(s)* by ensuring that each student prints his/her name beside his/her examination booklet number. To record changes in registration or attendance, codes identifying possible reasons for these changes have been developed. Please use these reason codes (*Appendix 4, p. 13*) to report this information on the *Student Registration Form B (Appendix 3, p. 12)*.

_____ 2. Every half hour advise students of the amount of time remaining for writing the examination by:

- making an announcement, and
- writing the remaining time on a board.

Ending the Examination Session

_____ 1. Cross-reference the name and booklet number on the *Attendance Form(s)* with the numbers on the examination booklets (and the *Demographic Forms*) as students submit their examination materials. Students must have their assigned booklet number on all documents.

_____ 2. Place a check "✓" on the *Attendance Form* (s) in the "Booklet Submitted for Marking Tuesday, January 18, 2000" column for each booklet returned to the Assessment and Evaluation Branch for marking.

_____ 3. **Record the exact examination end time on the *Supervising Teacher Report* when the last booklet is submitted.**

_____ 4. Stack the booklets in numerical order.

_____ 5. Ensure that all completed *Demographic Forms* are in numerical order in the envelope provided for return to the Assessment and Evaluation Branch. **Do not seal the envelope.**

_____ 6. Complete the *Supervising Teacher Report* and sign where indicated.

REMEMBER: Note any unusual circumstances or special provisions made for students on the *Supervising Teacher Report.*

_____ 7. Complete the *Supervising Teacher Feedback Form.*

_____ 8. Verify and return materials according to the instructions on the following pages.

Examination Return Procedures

It is essential that all examination materials are verified and packaged for return to the Assessment and Evaluation Branch immediately following completion of the examination.

Verification of Materials

Immediately following the conclusion of the examination session:

- Ensure that the number of student names on the *Attendance Form(s)* **and** the number of check marks in the "Booklet Submitted for Marking" column matches your count of booklets for submission. The Supervising Teacher should **print** his/her name on the space provided on the form.
- Ensure that the total number of examination booklets and *Demographic Forms* equal the number indicated on the *Supervising Teacher Report*. Account for all discrepancies by writing a note on the *Report*.
- Record changes between students registered and students in attendance on the *Student Registration Form B*. Please use the *List of Reason Codes for Changes in Examination Student Registration Numbers* (Appendix 4, p. 13). Where the use of an "Other" code is appropriate, please state the reason in the "Reason Code" column on the *Student Registration Form B* (Appendix 3, p. 12).
- **Photocopy the *Attendance Form*(s) for your records**. Return the originals to the Assessment and Evaluation Branch with the completed examination materials following the administration of the examination. Marks will be returned by booklet number only. Student names will **not** appear on the *Student Profiles*.
- If you have detected a defective examination booklet during the examination administration, ensure that **both** booklets (identically numbered) are placed together with an elastic band.
- Arrange examination booklets and completed *Demographic Forms* in numerical order as indicated on the *Attendance Form*(s).
- Place completed *Demographic Forms* in the labelled return envelope. Do not use elastic bands, staples or paper clips on these forms as they may damage the sheets. **Do not seal the envelope**.
- Check that you have completed and signed the *Supervising Teacher Report*. Any unusual circumstances observed or special provisions made for students should be noted on the report.
- Complete the *Supervising Teacher Feedback Form*.
- Collect the completed *Principal Feedback Form*.

What to Return

The package(s) returned to the Assessment and Evaluation Branch should contain:

- **Used** Mathematics 40G provincial examination booklets;
- Damaged/misprinted examination booklets—with notations regarding the defect(s);
- **Completed** *Demographic Forms* (in envelope provided);
- **Original** of the *Attendance Form(s)*, including any extra forms used;
- Completed *Student Registration Form(s) B*;
- Completed *Supervising Teacher Report(s);*
- Completed *Supervising Teacher Feedback Form(s)*; and
- Completed *Principal Feedback Form.*

USE THE PACKING LIST TO GUIDE YOU IN TAKING INVENTORY OF ALL DOCUMENTS

Please note:

- **It is imperative that the Mathematics 40G Provincial Examination materials are returned immediately after the completion of the examination on January 18, 2000, using the shipping labels provided.**

- The school may retain:
  - unused examination booklets;
  - *Formulas and Tables* booklets;
  - manuals;
  - checklists; and
  - unused generic *Demographic Forms*.

Where and when to return examination materials

Materials are prepared for return immediately after completion of the examination on January 18, 2000. Once the examination materials have been checked by the Supervising Teacher, the package is sent to:

Daniel Limoges
Assessment and Evaluation Branch
Loading Dock–1567 Dublin Avenue
Winnipeg MB R3E 3J5

Use the Mathematics 40G Provincial Examination shipping labels provided.

How to Return

Do not use divisional couriers to return examinations. Use only the commercial carriers identified as follows. Manitoba Education and Training will assume all courier costs of transporting examination materials.

City of Winnipeg Schools

Schools in the City of Winnipeg send package(s) directly to the Assessment and Evaluation Branch via **Internet Courier and Messenger Services (668-5552).** The person placing the call should quote **account number ED502,** give the school name, address, and his/her name as a contact person.

Schools Outside the City of Winnipeg

Schools outside the City of Winnipeg return their package(s) by Priority Courier or Xpresspost. Please package all materials in **one box or mailing envelope** whenever possible.

After the package(s) is (are) sealed, affix the Mathematics 40G Provincial Examination shipping labels.

To utilize the ***Bill of Lading***:

1. Sign the "Sender's Signature" section of the Bill of Lading at the "X".

2. Take your sealed package and Bill of Lading to the post office.

3. The postal clerk will fill in the weight of the package and prepare the package for mailing. Ask the postal clerk for the Customer Receipt and keep it as a record of shipment. If it is necessary to ask Canada Post to trace the package, your school will be contacted and asked to provide the Item Number.

See *Appendix 5, p. 14* for a sample of a completed *Bill of Lading*.